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An Address
ON
EVOLUTION.

Delivered before the British Association for the Advancement of Science, Part I. at Cape Town on August 15th, and Part II. at Johannesburg on August 30th, 1905,

BY PROFESSOR G. H. DARWIN, M.A., LL.D., PH.D., F.R.S.,
THE PRESIDENT.

PART I.

GENTLEMEN,—Bartholomeu Diaz, the discoverer of the Cape of Storms, spent 16 months on his voyage, and the little flotilla of Vasco da Gama, sailing from Lisbon on July 8th, 1497, only reached the Cape in the middle of November. These bold men, sailing in their puny fishing smacks to unknown lands, met the perils of the sea and the attacks of savages with equal courage. How great was the danger of such a voyage may be gathered from the fact that less than half the men who sailed with da Gama lived to return to Lisbon. 408 years have passed since that voyage, and a ship of 13,000 tons has just brought us here, in safety and luxury, in but little more than a fortnight. How striking are the contrasts presented by these events! On the one hand compare the courage, the endurance, and the persistence of the early navigators with the little that has been demanded of us; on the other hand, consider how much man's power over the forces of Nature has been augmented during the past four centuries. The capacity for heroism is probably undiminished, but certainly the occasions are now rarer when it is demanded of us. If we are heroes, at least but few of us ever find it out, and when we read stories of ancient feats of courage it is hard to prevent an uneasy thought that, notwithstanding our boasted mechanical inventions, we are perhaps degenerate descendants of our great predecessors. Yet the thought that to-day is less romantic and less heroic than yesterday has its consolation, for it means that the lot of man is easier than it was. Mankind, indeed, may be justly proud that this improvement has been due to the successive efforts of each generation to add to the heritage of knowledge handed down to it by its predecessors, whereby we have been born to the accumulated endowment of centuries of genius and labour.

I am told that in the United States the phrase "I want to know" has lost the simple meaning implied by the words and has become a mere exclamation of surprise. Such a conventional expression could hardly have gained currency except amongst a people who aspire to knowledge. The dominance of the European race in America, Australasia, and South Africa has no doubt arisen from many causes, but amongst these perhaps the chief one is that not only do "we want to know," but also that we are determined to find out. And now within the last quarter of a century we have welcomed into the ranks of those who "want to know" an Oriental race, which has already proved itself strong in the peaceful arts of knowledge. I take it, then, that you have invited us because you want to know what is worth knowing; and we are here because we want to know you, to learn what you have to tell us, and to see that South Africa of which we have heard so much. The hospitality which you are offering us is so lavish, and the journeys which you have organised are so extensive, that the cynical observer might be tempted to describe our meeting as the largest picnic on record. Although we intend to enjoy our picnic with all our hearts, yet I should like to tell the cynic, if he is here, that perhaps the most important object of these conferences is the opportunity which they afford for personal intercourse between men of like minds who live at the remotest corners of the earth. We shall pass through your land with the speed and the voracity of a flight of locusts; but, unlike the locust, we shall, I hope, leave behind us permanent fertilisation in the form of stimulated scientific and educational activity. And this result will ensue whether or not we who have come from Europe are able worthily to sustain the lofty part of prophets of science. We shall try our best to play to your satisfaction on the great stage upon which you call on us to act, and if when we are gone you shall, amongst yourselves, pronounce the performance a poor one, yet the fact will remain that the meeting has embodied in a material form the desire that the progress of this great continent shall not be merely material; and such an aspiration secures its own fulfilment. However small may be the tangible results of our meeting, we shall always be proud to have been associated with you in your efforts for the advancement of science.

We do not know whether the last hundred years will be regarded for ever as the *seculum mirabile* of discovery, or whether it is but the prelude to yet more marvellous centuries. To us living men, who scarcely pass a year of our lives without witnessing some new marvel of discovery or invention, the rate at which the development of knowledge proceeds is truly astonishing; but from a wider point of view the scale of time is relatively unimportant, for the universe is leisurely in its procedure. Whether the changes which we witness be fast or slow they form a part of a long sequence of events which begin in some past of immeasurable remoteness and tend to some end which we cannot foresee. It must always be profoundly interesting to the mind of man to trace successive cause and effect in the chain of events which make up the history of the earth and all that lives on it, and to speculate on the origin and future fate of animals and of planets, suns, and stars. I shall try, then, to set forth in my address some of the attempts which have been made to formulate evolutionary speculation. This choice of a subject has, moreover, been almost forced on me by the scope of my own scientific work and it is, I think, justified by the name which I bear. It will be my fault and your misfortune if I fail to convey to you some part of the interest which is naturally inherent in such researches.

The man who propounds a theory of evolution is attempting to reconstruct the history of the past by means of the circumstantial evidence afforded by the present. The historian of man, on the other hand, has the advantage over the evolutionist in that he has the written records of the past on which to rely. The discrimination of the truth from amongst discordant records is frequently a work demanding the highest qualities of judgment; yet when this end is attained it remains for the historian to convert the arid skeleton of facts into a living whole by clothing it with the flesh of human motives and impulses. For this part of his task he needs much of that power of entering into the spirit of other men's lives which goes to the making of a poet. Thus the historian should possess not only the patience of the man of science in the analysis of facts, but also the imagination of the poet to grasp what the facts have meant. Such a combination is rarely to be found in equal perfection on both sides and it would not be hard to analyse the works of great historians so as to see which quality was predominant in each of them. The evolutionist is spared the surpassing difficulty of the human element, yet he also needs imagination, although of a different character from that of the historian. In its lowest form his imagination is that of the detective who reconstructs the story of a crime; in its highest it demands the power of breaking loose from all the trammels of convention and education and of imagining something which has never occurred to the mind of man before. In every case the evolutionist must form a theory for the facts before him, and the great theorist is only to be distinguished from the fantastic fool by the sobriety of his judgment—a distinction, however, sufficient to make one rare and the other only too common.

The test of a scientific theory lies in the number of facts which it groups into a connected whole; it ought besides to be fruitful in pointing the way to the discovery and coördination of new and previously unsuspected facts. Thus a good theory is in effect a cyclopædia of knowledge, susceptible of indefinite extension by the addition of supplementary volumes. Hardly any theory is all true and many are not all false. A theory may be essentially at fault and yet point the way to truth and so justify its temporary existence. We should not, therefore, totally reject one or other of two rival theories on the ground that they seem, with our present knowledge, mutually inconsistent, for it is likely that both may contain important elements of truth. The theories of which I shall have to speak hereafter may often appear discordant with one another according to our present lights. Yet we must not scruple to pursue the several divergent lines of thought to their logical conclusions, relying on future

discovery to eliminate the false and to reconcile together the truths which form part of each of them. In the mouths of the unscientific evolution is often spoken of as almost synonymous with the evolution of the various species of animals on the earth and this again is sometimes thought to be practically the same thing as the theory of natural selection. Of course, those who are conversant with the history of scientific ideas are aware that a belief in the gradual and orderly transformation of Nature, both animate and inanimate, is of great antiquity. We may liken the facts on which theories of evolution are based to a confused heap of beads, from which a keen-sighted searcher after truth picks out and strings together a few which happen to catch his eye as possessing certain resemblances. Until recently theories of evolution in both realms of Nature were partial and discontinuous and the chains of facts were correspondingly short and disconnected. At length the theory of natural selection, by formulating the cause of the divergence of forms in the organic world from the parental stock, furnished the naturalist with a clue by which he examined the disordered mass of facts before him, and he was thus enabled to go far in deducing order where chaos had ruled before, but the problem of reducing the heap to perfect order will probably baffle the ingenuity of the investigator for ever. So illuminating has been this new idea that, as the whole of nature has gradually been re-examined by its aid, thousands of new facts have been brought to light and have been strung in due order on the necklace of knowledge. Indeed, the transformation resulting from the new point of view has been so far-reaching as almost to justify the misapprehension of the unscientific as to the date when the doctrines of evolution first originated in the mind of man.

It is not my object, nor indeed am I competent, to examine the extent to which the theory of natural selection has needed modification since it was first formulated by my father and Wallace. But I am surely justified in maintaining that the general principle holds its place firmly as a permanent acquisition to modes of thought. Evolutionary doctrines concerning inanimate nature, although of much older date than those which concern life, have been profoundly affected by the great impulse of which I have spoken. It has thus come about that the origin and history of the chemical elements and of stellar systems now occupy a far larger space in the scientific mind than was formerly the case. The subject which I shall discuss to-night is the extent to which ideas, parallel to those which have done so much towards elucidating the problems of life, hold good also in the world of matter; and I believe that it will be possible to show that in this respect there exists a resemblance between the two realms of Nature, which is not merely fanciful. It is proper to add that as long ago as 1873 Baron Karl du Prel discussed the same subject from a similar point of view in a book entitled "The Struggle for Life in the Heavens."[1] Although inanimate matter moves under the action of forces which are incomparably simpler than those governing living beings, yet the problems of the physicist and the astronomer are scarcely less complex than those which present themselves to the biologist. The mystery of life remains as impenetrable as ever and in his evolutionary speculations the biologist does not attempt to explain life itself, but, adopting as his unit the animal as a whole, discusses its relationships to other animals and to the surrounding conditions. The physicist, on the other hand, is irresistibly impelled to form theories as to the intimate constitution of the ultimate parts of matter and he desires further to piece together the past histories and the future fates of planets, stars, and nebulæ. If, then, the speculations of the physicist seem in some respects less advanced than those of the biologist, it is chiefly because he is more ambitious in his aims. Physicists and astronomers have not yet found their Johannesburg or Kimberley; but, although we are still mere prospectors, I am proposing to show you some of the dust and diamonds which we have already extracted from our surface mines. The fundamental idea in the theory of natural selection is the persistence of those types of life which are adapted to their surrounding conditions, and the elimination by extermination of ill-adapted types. The struggle for life amongst forms possessing a greater or less degree of adaptation to slowly varying conditions is held to explain the gradual transmutation of species. Although a different phraseology is used when we speak of the physical world, yet the idea is essentially the same.

The point of view from which I wish you to consider the phenomena of the world of matter may be best explained if, in the first instance, I refer to political institutions, because we all understand, or fancy we understand, something of politics, whilst the problems of physics are commonly far less familiar to us. This illustration will have a further advantage in that it will not be a mere parable, but will involve the fundamental conception of the nature of evolution. The complex interactions of man with man in a community are usually described by such comprehensive terms as the State, the Commonwealth, or the Government. Various States differ widely in their constitution and in the degree of the complexity of their organisation, and we classify them by various general terms, such as autocracy, aristocracy, or democracy, which express somewhat loosely their leading characteristics. But for the purpose of showing the analogy with physics, we need terms of wider import than those habitually used in politics. All forms of the State imply inter-relationship in the actions of men, and action implies movement. Thus the State may be described as a configuration or arrangement of a community of men; or we may say that it implies a definite mode of motion of man—that is to say, an organised scheme of action of man on man. Political history gives an account of the gradual changes in such configurations or modes of motion of men as have possessed the quality of persistence or of stability to resist the disintegrating influence of surrounding circumstances. In the world of life the naturalist describes those forms which persist as species; similarly the physicist speaks of stable configurations or modes of motion of matter; and the politician speaks of States. The idea at the base of all these conceptions is that of stability, or the power of resisting disintegration. In other words, the degree of persistence or permanence of a species, of a configuration of matter, or of a State depends on the perfection of its adaptation to its surrounding conditions.

If we trace the history of a State we find the degree of its stability gradually changing, slowly rising to a maximum, and then slowly declining. When it falls to nothing a revolution ensues and a new form of government is established. The new mode of motion or government has at first but slight stability, but it gradually acquires strength and permanence, until in its turn the slow decay of stability leads on to a new revolution. Such crises in political history may give rise to a condition in which the State is incapable of perpetuation by transformation. This occurs when a savage tribe nearly exterminates another tribe and leads the few survivors into slavery; the previous form of government then becomes extinct. The physicist, like the biologist and the historian, watches the effect of slowly varying external conditions; he sees the quality of persistence or stability gradually decaying until it vanishes, when there ensues what is called, in politics, a revolution.

These considerations lead me to express a doubt whether biologists have been correct in looking for continuous transformation of species. Judging by analogy we should rather expect to find slight continuous changes occurring during a long period of time, followed by a somewhat sudden transformation into a new species or by rapid extinction. However this may be, when the stability of a mode of motion vanishes the physicist either finds that it is replaced by a new persistent type of motion adapted to the changed conditions, or perhaps that no such transformation is possible and that the mode of motion has become extinct. The evanescent type of animal life has often been preserved for us, fossilised in geological strata; the evanescent form of government is preserved in written records or in the customs of savage tribes; but the physicist has to pursue his investigations without such useful hints as to the past. The time-scale in the transmutation of species of animals is furnished by the geological record, although it is not possible to translate that record into years. As we shall see hereafter, the time needed for a change of type in atoms or molecules may be measured by millionths of a second, while in the history of the stars continuous changes occupy millions of years. Notwithstanding this gigantic contrast in speed, yet the process involved seems to be essentially the same. It is hardly too much to assert that, if the conditions which determine stability of motion could be accurately formulated throughout the universe, the past history of the cosmos and its future fate would be unfolded. How indefinitely far we

[1] Der Kampf um's Dasein am Himmel (zweite Auflage), Denicke, Berlin, 1875.

stand removed from such a state of knowledge will become abundantly clear from the remainder of my address.

The study of stability and instability then furnishes the problems which the physicist and biologist alike attempt to solve. The two classes of problems differ principally in the fact that the conditions of the world of life are so incomparably more intricate than those of the world of matter that the biologist is compelled to abandon the attempt to determine the absolute amount of the influence of the various causes which have affected the existence of species. His conclusions are merely qualitative and general and he is almost universally compelled to refrain from asserting even in general terms what are the reasons which have rendered one form of animal life stable and persistent and another unstable and evanescent. On the other hand, the physicist, as a general rule, does not rest satisfied unless he obtains a quantitative estimate of various causes and effects on the systems of matter which he discusses. Yet there are some problems of physical evolution in which the conditions are so complex that the physicist is driven, as is the biologist, to rest satisfied with qualitative rather than quantitative conclusions. But he is not content with such crude conclusions except in the last resort and he generally prefers to proceed by a different method. The mathematician mentally constructs an ideal mechanical system or model which is intended to represent in its leading features the system he wants to examine. It is often a task of the utmost difficulty to devise such a model and the investigator may perchance unconsciously drop out as unimportant something which is really essential to represent actuality. He next examines the conditions of his ideal system and determines, if he can, all the possible stable and unstable configurations, together with the circumstances which will cause transitions from one to the other. Even when the working model has been successfully imagined, this latter task may often overtax the powers of the mathematician. Finally, it remains for him to apply his results to actual matter and to form a judgment of the extent to which it is justifiable to interpret nature by means of his results.

The remainder of my address will be occupied by an account of various investigations which will illustrate the principles and methods which I have now explained in general terms.

The fascinating idea that matter of all kinds has a common substratum is of remote antiquity. In the middle ages the alchemists, inspired by this idea, conceived the possibility of transforming the baser metals into gold. The sole difficulty seemed to them the discovery of an appropriate series of chemical operations. We now know that they were always indefinitely far from the goal of their search, yet we must accord to them the honour of having been the pioneers of modern chemistry. The object of alchemy, as stated in modern language, was to break up or disassociate the atoms of one chemical element into its component parts and afterwards to reunite them into atoms of gold. Although even the dissociative stage of the alchemistic problem still lies far beyond the power of the chemist, yet modern researches seem to furnish a sufficiently clear idea of the structure of atoms to enable us to see what would have to be done to effect a transformation of elements. Indeed, in the complex changes which are found to occur spontaneously in uranium, radium, and the allied metals we are probably watching a spontaneous dissociation and transmutation of elements. Natural selection may seem at first sight as remote as the poles asunder from the ideas of the alchemist, yet dissociation and transmutation depend on the instability and regained stability of the atom and the survival of the stable atom depends on the principle of natural selection. Until some ten years ago the essential diversity of the chemical elements was accepted by the chemist as an ultimate fact, and indeed the very name of atom, or that which cannot be cut, was given to what was supposed to be the final indivisible portion of matter. The chemist thus proceeded in much the same way as the biologist who, in discussing evolution, accepts the species as his working unit. Accordingly, until recently the chemist discussed working models of matter of atomic structure and the vast edifice of modern chemistry has been built with atomic bricks. But within the last few years the electrical researches of Lenard, Roentgen, Becquerel, the Curies, of my colleagues Larmor and Thomson, and of a host of others, have shown that the atom is not indivisible and a flood of light has been thrown thereby on the ultimate constitution of matter. Amongst all these fertile investigators it seems to me that Thomson stands pre-eminent, because it is principally through him that we are to-day in a better position for picturing the structure of an atom than was ever the case before. Even if I had the knowledge requisite for a complete exposition of these investigations the limits of time would compel me to confine myself to those parts of the subject which bear on the constitution and origin of the elements.

It has been shown, then, that the atom, previously supposed to be indivisible, really consists of a large number of component parts. By various convergent lines of experiment it has been proved that the simplest of all atoms—namely, that of hydrogen—consists of about 800 separate parts; while the number of parts in the atom of the denser metals must be counted by tens of thousands. These separate parts of the atom have been called corpuscles or electrons, and may be described as particles of negative electricity. It is paradoxical, yet true, that the physicist knows more about these ultra-atomic corpuscles and can more easily count them than is the case with the atoms of which they form the parts. The corpuscles, being negatively electrified, repel one another just as the hairs on a person's head mutually repel one another when combed with a vulcanite comb. The mechanism is as yet obscure whereby the mutual repulsion of the negative corpuscles is restrained from breaking up the atom, but a positive electrical charge or something equivalent thereto must exist in the atom so as to prevent disruption. The existence in the atom of this community of negative corpuscles is certain and we know further that they are moving with speeds which may in some cases be comparable to the velocity of light—namely, 200,000 miles a second. But the mechanism whereby they are held together in a group is hypothetical.

It is only just a year ago that Thomson suggested, as representing the atom, a mechanical or electrical model the properties of which could be accurately examined by mathematical methods. He would be the first to admit that his model is at most merely a crude representation of actuality, yet he has been able to show that such an atom must possess mechanical and electrical properties which simulate, with what Whetham describes as "almost Satanic exactness," some of the most obscure and yet most fundamental properties of the chemical elements. "Se non è vero, è ben trovato," and we are surely justified in believing that we have the clue which the alchemists sought in vain. Thomson's atom consists of a globe charged with positive electricity, inside which there are some thousand or thousands of corpuscles of negative electricity revolving in regular orbits with great velocities. Since two electrical charges repel one another if they are of the same kind, and attract one another if they are of opposite kinds, the corpuscles mutually repel one another, but all are attracted by the globe containing them. The forces called into play by these electrical interactions are clearly very complicated and you will not be surprised to learn that Thomson found himself compelled to limit his detailed examination of the model atom to one containing about 70 corpuscles. It is indeed a triumph of mathematical power to have determined the mechanical conditions of such a miniature planetary system as I have described.

It appears that there are definite arrangements of the orbits in which the corpuscles must revolve if they are to be persistent or stable in their motions. For the purpose of general discussion, which is all that I shall attempt, you may take it that the number of corpuscles in such a community is fixed, and we may state that definite numbers of corpuscles are capable of association in stable communities of definite types. An infinite number of communities are possible, possessing greater or lesser degrees of stability. Thus the corpuscles in one such community might make thousands of revolutions in the orbits before instability declared itself; such an atom might perhaps last for a long time as estimated in millionths of seconds, but it must finally break up and the corpuscles must disperse or rearrange themselves after the ejection of some of their number. We are thus led to conjecture that the several chemical elements represent those different kinds of communities of corpuscles which have proved by their stability to be successful in the struggle for life. If this is so, it is almost impossible to believe that the successful species have existed for all time and we must hold that they originated under conditions about which I must forbear to follow Sir Norman Lockyer in speculating. But if the elements were not eternal in the past we must ask whether there is reason to believe that they will be eternal in the future. Now, although the conception of the decay of

an element and its spontaneous transmutation into another element would have seemed absolutely repugnant to the chemist until recently; yet analogy with other moving systems seems to suggest that the elements are not eternal. At any rate, it is of interest to pursue to its end the history of the model atom which has proved to be so successful in imitating the properties of matter. The laws which govern electricity in motion indicate that such an atom must be radiating or losing energy, and therefore a time must come when it will run down, as a clock does. When this time comes it will spontaneously transmute itself into an element which needs less energy than was required in the former state. Thomson conceives that an atom might be constructed after his model so that its decay should be very slow. It might, he thinks, be made to run for a million years but it would not be eternal.

Such a conclusion is an absolute contradiction to all that was known of the elements until recently, for no symptoms of decay are perceived and the elements existing in the solar system must already have lasted for millions of years. Nevertheless, there is good reason to believe that in radium and in other elements possessing very complex atoms we do actually observe that break-up and spontaneous re-arrangement which constitute a transmutation of elements. It is impossible as yet to say how science will solve this difficulty, but future discovery in this field must surely prove deeply interesting. It may well be that the train of thought which I have sketched will ultimately profoundly affect the material side of human life, however remote it may now seem from our experiences of daily life.

I have not as yet made any attempt to represent the excessive minuteness of the corpuscles of the existence of which we are now so confident, but as an introduction to what I have to speak of next it is necessary to do so. To obtain any adequate conception of their size we must betake ourselves to a scheme of threefold magnification. Lord Kelvin has shown that if a drop of water were magnified to the size of the earth the molecules of water would be of a size intermediate between that of a cricket-ball and of a marble. Now each molecule contains three atoms, two being of hydrogen and one of oxygen. The molecular system probably presents some sort of analogy with that of a triple star, the three atoms, replacing the stars, revolving about one another in some sort of dance which cannot be exactly described. I doubt whether it is possible to say how large a part of the space occupied by the whole molecule is occupied by the atoms, but perhaps the atoms bear to the molecule some such relationship as the molecule to the drop of water referred to. Finally, the corpuscles may stand to the atom in a similar scale of magnitude. Accordingly a threefold magnification would be needed to bring these ultimate parts of the atom within the range of our ordinary scales of measurement.

I have already considered what would be observed under the triply powerful microscope and must now return to the intermediate stage of magnification, in which we consider those communities of atoms which form molecules. This is the field of research of the chemist. Although prudence would tell me that it would be wiser not to speak of a subject of which I know so little, yet I cannot refrain from saying a few words. The community of atoms in water has been compared with a triple star, but there are others known to the chemist in which the atoms are to be counted by fifties and hundreds, so that they resemble constellations. I conceive that here again we meet with conditions similar to those which we have supposed to exist in the atom. Communities of atoms are called chemical combinations and we know that they possess every degree of stability. The existence of some is so precarious that the chemist in his laboratory can barely retain them for a moment; others are so stubborn that he can barely break them up. In this case dissociation and reunion into new forms of communities are in incessant and spontaneous progress throughout the world. The more persistent or more stable combinations succeed in their struggle for life and are found in vast quantities, as in the cases of common salt and of the combinations of silicon. But no one has ever found a mine of gun-cotton, because it has so slight a power of resistance. If, through some accidental collocation of elements, a single molecule of gun-cotton were formed, it would have but a short life. Stability is, further, a property of relationship to surrounding conditions; it denotes adaptation to environment. Thus salt is adapted to the struggle for existence on the earth, but it cannot withstand the severer conditions which exist in the sun.

PART II.

GENTLEMEN,—At Cape Town I attempted to make a general survey of evolution in its various branches and laid down certain general propositions as to what seems common to all of them. I then went on to consider how these general laws found an application in the most recent speculations as to the constitution of matter. The atoms of the elements and the molecules of chemical combinations are constructed on so minute a scale that it is no easy task to picture them to our minds. On the other hand, we see in the heavens arrangements of matter on a scale so vast that it is equally difficult to grasp. Both the inconceivably small and the inconceivably large should fall under a general law, if it is a true one; and the history of satellites, planets, and stars present at least as great an interest as that of atoms and molecules. Accordingly the transition from the small to the large seemed to afford a convenient halting place in my address, and I propose to-night to resume the discussion by considering various theories of celestial evolution. But I will first try to render the point of view intelligible which I desire to take. A short preliminary explanation for those who were not at Cape Town thus becomes necessary. I desire to present the essential features which are common to evolution in all its branches and this may be done most easily by reference to political institutions, because we all fancy we understand something of politics.

The complex interactions of man with man in a community are usually described by such comprehensive terms as "the State," "the Commonwealth," or "the Government." Various States differ widely in their constitution and in the degree of the complexity of their organisation, and we classify them by various general terms, such as "autocracy," "aristocracy," or "democracy," which express somewhat loosely their leading characteristics. But for the purpose of showing the analogy with physics we need terms of wider import than those habitually used in politics. All forms of the State imply inter-relationship in the actions of men and action implies movement. Thus the State may be described as a configuration or arrangement of a community of men; or we may say that it implies a definite mode of motion of men—that is to say, an organised scheme of action of man on man. Political history gives an account of the gradual changes in such configurations or modes of motion of men as have possessed the quality of persistence or of stability to resist the disintegrating influence of surrounding circumstances. In the history of a State we find this stability or power of persistence continually changing. It slowly rises to a maximum and then declines; when it falls to nothing a revolution ensues and a new form of government is established. This new mode of motion of men or government has at first but little stability, but it gradually acquires strength and permanence until in its turn the slow decay in the power of persistence leads on to a new revolution. Such crises in political history may give rise to a condition in which the State is incapable of perpetuation by transformation. This occurs when a savage tribe nearly exterminates another and leads the few survivors into slavery; the previous form of government then becomes extinct.

Now turn to the evolution of the various forms of life. The fundamental idea in the theory of natural selection is the persistence of those types of life which are adapted to their surrounding conditions and the elimination by extermination of the ill-adapted types. The struggle for life amongst forms possessing various degrees of adaptation to slowly varying conditions is held to explain the transmutation of species. Although a different phraseology is used when we speak of the physical world yet the idea is essentially the same. Theories of physical evolution involve the discovery of modes of motion or configurations of matter which are capable of persistence. The physicist describes such types as stable; the biologist calls them species. The physicist, the biologist, and the historian alike watch the effect of slowly varying external conditions; they all observe the rise and decline of stability, with the consequent change of type of motion, transmutation of species, or revolution.

And now after this preface I turn to astronomical theories of evolution. The German astronomer Bode long ago propounded a simple empirical law concerning the distances at which the several planets move about the sun and his formula embraces so large a number of cases with accuracy

that we are compelled to believe that it arises in some manner from the primitive conditions of the planetary system. The explanation of the causes which have led to this simple law as to the planetary distances presents an interesting problem and, although it is still unsolved, we may obtain some insight into its meaning by considering what may be called a working model of ideal simplicity. Imagine, then, a sun round which there moves in a circle a single large planet. I will call this planet Jove, because it may be taken as a representative of our largest planet Jupiter. Suppose next that a meteoric stone or small planet is projected in any perfectly arbitrary manner in the same plane in which Jove is moving; then we ask how this third body will move. It appears that under the combined attractions of the sun and Jove the meteoric stone will in general describe an orbit of extraordinary complexity, at one time moving slowly at a great distance from both the sun and Jove, at other times rushing close past one or other of them. As it grazes past Jove or the sun it may often but just escape a catastrophe, but a time will come at length when it runs its chances too fine and comes into actual collision. The individual career of the stone is then ended by absorption and, of course, by far the greater chance is that it will find its Nirvana by absorption in the sun.

Next, let us suppose that instead of one wandering meteoric stone or minor planet there are hundreds of them moving initially in all conceivable directions. Since they are all supposed to be very small, their mutual attractions will be insignificant and they will each move almost as though they were influenced only by the sun and Jove. Most of these stones will be absorbed by the sun and the minority will collide with Jove. When we inquire how long the career of a stone may be we find that it depends on the direction and speed with which it is started, and that by proper adjustment the delay of the final catastrophe may be made as long as we please. Thus by making the delay indefinitely long we reach the conception of a meteoric stone which moves so as never to come into collision with either body. There are, therefore, certain perpetual orbits in which a meteoric stone or minor planet may move for ever without collision. But when such an immortal career has been discovered for our minor planet it still remains to discover whether the slightest possible departure from the prescribed orbit will become greater and greater and ultimately lead to a collimon with the sun or Jove, or whether the body will travel so as to cross and recross the exact perpetual orbit, always remaining close to it. If the slightest departure inevitably increases as time goes on the orbit is unstable; if, on the other hand, it only leads to a slight waviness in the path described it is stable.

We thus arrive at another distinction: there are perpetual orbits, but some, and indeed most, are unstable, and these do not offer an immortal career for a meteoric stone; and there are other perpetual orbits which are stable or persistent. The unstable ones are those which succumb in the struggle for life and the stable ones are the species adapted to their environment. If, then, we are given a system of a sun and large planet, together with a swarm of small bodies moving in all sorts of ways, the sun and planet will grow by accretion, gradually sweeping up the dust and rubbish of the system, and there will survive a number of small planets and satellites moving in certain definite paths. The final outcome will be an orderly planetary system in which the various orbits are arranged according to some definite law. There is hardly room for doubt that if a complete solution for our solar system were attainable, we should find that the orbits of the existing planets and satellites are numbered amongst the stable perpetual orbits and should thus obtain a rigorous mechanical explanation of Bode's law concerning the planetary distances.

In the first portion of my address I described the orbits in which the corpuscles move in the atoms of matter and drew attention to the resemblance to a planetary system. It may not perhaps be fanciful to imagine that some general mathematical method devised for solving a problem of cosmical evolution may find another application to miniature atomic systems and may thus lead onward to vast developments of industrial mechanics. Science, however diverse its aims, is a whole, and men of science do well to impress on the captains of industry that they should not look askance on those branches of investigation which may seem for the moment far beyond any possibility of practical utility. The theory which I have now explained points to the origin of the sun and planets from gradual accretions of meteoric stones and it makes no claim to carry the story back behind the time when there was already a central condensation or sun about which there circled another condensation or planet. But more than a century ago an attempt had already been made to reconstruct the history back to a yet remoter past and, as we shall see, this attempt was based upon quite a different supposition as to the constitution of the primitive solar system. I myself believe that the theory I have just explained, as well as that to which I am coming, contains essential elements of truth and that the apparent discordances will some day be reconciled. The theory of which I speak is the celebrated nebular hypothesis, first suggested by the German philosopher Kant, and later restated independently and in better form by the French mathematician Laplace.

Laplace traced the origin of the solar system to a nebula or cloud of rarefied gas congregated round a central condensation which was ultimately to form the sun. The whole was slowly rotating about an axis through its centre, and, under the combined influences of rotation and of the mutual attraction of the gas, it assumed a globular form, slightly flattened at the poles. The primeval globular nebula is undoubtedly a stable or persistent figure, and thus Laplace's hypothesis conforms to the general laws which I have attempted to lay down. The nebula must have gradually cooled by radiation into space, and as it did so the gas must necessarily have left some of its spring or elasticity, thus permitting a greater degree of condensation of the whole. The contraction led inevitably to two results: first, the central condensation became hotter; and, secondly, the speed of its rotation became faster. The accelerated rotation led to an increase in the amount of polar flattening and the nebula at length assumed the form of a lens, or of a disk thicker in the middle than at the edges. Assuming the existence of the primitive nebula the hypothesis may be accepted thus far as practically certain.

From this point, however, doubt and difficulty enter into the argument. It is supposed that the nebula became so much flattened that it could not subsist as a continuous aggregation of gas, and a ring of matter detached itself from the equatorial regions. The central portions of the nebula, when relieved of the excrescence, resumed the more rounded shape formerly possessed by the whole. As the cooling continued the central portion in its turn became excessively flattened through the influence of its increased rotation; another equatorial ring then detached itself, and the whole process was repeated as before. In this way the whole nebula was fissured into a number of rings surrounding the central condensation, whose temperature must by then have reached incandescence. Each ring then aggregated itself round some nucleus which happened to exist in its circumference and so formed a subordinate nebula. Passing through a series of transformations like its parent, this nebula was finally replaced by a planet with attendant satellites. The whole process forms a majestic picture of the history of our system. But the mechanical conditions of a rotating nebula are too complex to admit as yet of complete mathematical treatment; and thus in discussing this theory the physicist is compelled in great measure to adopt the qualitative methods of the biologist rather than the quantitative ones which he would prefer. Although the telescope seems to confirm the general correctness of Laplace's hypothesis, yet it is hardly too much to say that every stage in the supposed process presents to us some impossibility. Thus, for example, the ring of Saturn seems to have suggested the theory to Laplace, but to take it as a model leads us straight to a quite fundamental difficulty. If a ring of matter ever concentrates under the influence of its mutual attraction it can only do so round the centre of gravity of the whole ring. Therefore the matter forming an approximately uniform ring, if it concentrates at all, can only fall in on the parent planet and be re-absorbed. Some external force other than the mutual attraction of the matter forming the ring, and therefore not provided by the theory, seems necessary to effect the supposed concentration. The only way of avoiding this difficulty is to suppose the ring to be ill-balanced or lop-sided; in this case, provided the want of balance is pronounced enough, concentration will take place round a point inside the ring but outside the planet. However, this is not the time to pursue these considerations further, yet enough has been said to show that the nebular hypothesis cannot be considered as a connected intelligible whole, however much of truth it may contain.

In the first theory which I sketched as to the origin of the sun and planets we supposed them to grow by the accretions of meteoric wanderers in space, and this hypothesis is apparently in fundamental disagreement with the conception of Laplace, who watches the transformations of a continuous gaseous nebula. I must not pause to consider how these seemingly discordant views may be reconciled but will merely say that I conceive both theories contain important elements of truth. We have seen that in order to explain the genesis of planets according to Laplace's theory the rings must be ill-balanced or even broken. If the ring were so far from being complete as only to cover a small segment of the whole circumference, the true features of the occurrences in the births of planets and satellites might be better represented by conceiving the detached portion of matter to have been more or less globular from the first rather than ring-shaped. Now, this idea introduces us to another group of researches whereby mathematicians have sought to explain the birth of planets and satellites. The solution of the problem of evolution involves the search for those persistent or stable forms which biologists would call species. The species of which I am now going to speak may be grouped in a family which comprises all those various forms which a mass of rotating liquid is capable of assuming under the conjoint influences of gravitation and rotation. If the earth were formed throughout of a liquid of the same density it would be one of the species of this family; and, indeed, these researches date back to the time of Newton, who was the first to explain the figures of planets. The ideal liquid planets we are to consider must be regarded as working models of actuality and inasmuch as the liquid is supposed to be incompressible the conditions depart somewhat widely from those of reality. Hence, when the problem has been solved much uncertainty remains as to the extent to which our conclusions will be applicable to actual celestial bodies.

We begin, then, with a rotating liquid planet like the earth, which is the first stable species of our family. We next impart in imagination more rotation to this planet and find by mathematical calculation that its power of resistance to any sort of disturbance is less than it was. In other words, its stability declines with increased rotation and at length we reach a stage at which the stability just vanishes. At this point the shape is a transitional one, for it is the beginning of a new species with different characteristics from the first and with a very feeble degree of stability or power of persistence. As a still further amount of rotation is imparted the stability of the new species increases to a maximum and then declines until a new transitional shape is reached and a new species comes into existence. In this way we pass from species to species with an ever-increasing amount of rotation. The first or planetary species has a circular equator like the earth; the second species has an oval equator, so that it is something like an egg spinning on its side on a table; in the third species we find that one of the two ends of the egg begins to swell and that the swelling gradually becomes a well-marked protrusion or filament. Finally, the filamentous protrusion becomes bulbous at its end and is only joined to the main mass of liquid by a gradually thinning neck. The neck at length breaks and we are left with two separated masses which may be called planet and satellite. In this ideal problem the successive transmutations of species are brought about by gradual additions to the amount of rotation with which the mass of liquid is endowed. It might seem as if this continuous addition to the amount of rotation were purely arbitrary and could have no counterpart in nature. But real bodies cool and contract in cooling and I must ask you to believe that the effects of an apparently arbitrary increase of rotation may be produced by cooling.

The figures which I succeeded in drawing, by means of rigorous calculation, of the later stages of this course of evolution are so curious as to remind one of some such phenomenon as the protrusion of a filament of protoplasm from a mass of living matter, and I suggest that we may see in this almost life-like process the counterpart of at least one form of the birth of double stars, planets, and satellites. My Cambridge colleague Jeans has also made an interesting contribution to the subject by attacking the far more difficult case where the rotating fluid is a compressible gas. In this case also he finds a family of types but the conception of compressibility introduced a new set of considerations in the transitions from species to species. The problem is, however, of such difficulty that he had to rest content with results which were rather qualitative than strictly quantitative. It cannot be doubted that the supposed Laplacian sequence of events possesses a considerable element of truth, yet these latter schemes of transformation can be followed in closer detail. It seems, then, probable that both processes furnish us with crude models of reality and that in some cases the first, and in others the second, is the better representative. The moon's mass is $\frac{1}{81}$th of that of the earth, whereas the mass of Titan, the largest satellite in the solar system, is $\frac{1}{4700}$th of that of Saturn. On the ground of this great difference between the relative magnitudes of all other satellites and of the moon it is not unreasonable to suppose that the mode of separation of the moon from the earth may also have been widely different. The theory of which I shall have next to speak claims to trace the gradual departure of the moon from an original position not far removed from the present surface of the earth. If this view is correct, we may suppose that the detachment of the moon from the earth occurred as a single portion of matter and not as a concentration of a Laplacian ring. If a planet is covered with oceans of water and air or if it is formed of plastic molten rock tidal oscillations must be generated in its mobile parts by the attractions of its satellites and of the sun. Such movements must be subject to frictional resistance and the planet's rotation will be slowly retarded by tidal friction in much the same way that a fly-wheel is gradually stopped by any external cause of friction. Since action and reaction are equal and opposite, the action of the satellites on the planet, which causes the tidal friction of which I speak, must correspond to a reaction of the planet on the motion of the satellites. At any moment of time we may regard the system composed of the rotating planet with its attendant satellite as a stable species of motion, but the friction of the tides introduces forces which produce a continuous, although slow, transformation in the configuration. It is then clearly of interest to trace backwards in time the changes produced by such a continuously acting cause and to dermine the initial condition from which the system of planet and satellite must have been slowly degrading. We might also look forward and discover whither the transformation tends.

Let us consider, then, the motion of the earth and moon revolving in company round the sun, on the supposition that the friction of the tides in the earth is the only effective cause of change. We are, in fact, to discuss a working model of the system analogous to those of which I have so often spoken before and it must suffice to set forth the result in its main outline as referring only to the past. If we take the "day," regarding it as a period of variable length, to mean the time occupied by a single rotation of the earth on its axis, and the "month," likewise variable in absolute length, to mean the time occupied by the moon in a single revolution round the earth, the number of days in the month expresses the speed of the earth's rotation relatively to the speed of the moon's revolution. Now in our retrospect both day and month are found continuously shortening, but as, on the whole, the month shortens much more quickly than the day the number of days in the month also falls. We may, then, ask at once, What is the initial stage to which the gradual transformation points? I say that on following the argument to its end the system may be traced back to a time when the day and month were identical in length and were both only about four or five of our present hours. The identity of day and month means that the moon was always opposite to the same side of the earth; thus, at the beginning the earth always presented the same face to the moon, just as the moon now always shows the same face to us. Moreover, when the month was only some four or five of our present hours in length the moon must have been only a few thousand miles from the earth's surface—a great contrast with the present distance of 240,000 miles. It might well be argued from this conclusion alone that the moon separated from the earth more or less as a single portion of matter at a time immediately antecedent to the initial stage to which she has been traced. But there exists a yet more weighty argument favourable to this view, for it appears that the initial stage is one in which the stability of the species of motion is tottering, so that the system presents the characteristic of a transitional form, which we have seen to denote a change of type or species in a previous case. In discussing the transformations of a liquid planet we saw the tendency of the single mass to divide into two portions and now we seem to reach a similar crisis from the opposite end, when in retrospect we trace back the

system to two masses of unequal sizes in close proximity with one another. The argument almost carries conviction with it, but I have necessarily been compelled to pass over various doubtful points.

Time is wanting to consider other subjects worthy of notice which arise out of this problem, yet I wish to point out the fact that tidal friction is competent to explain the eccentricity of an orbit, because this conclusion has been applied in a manner to which I shall have occasion to return hereafter. If, as has been argued, tidal friction has played so important a part in the history of the earth and moon, it might be expected that the like should be true of the other planets and satellites and of the planets themselves in their relationship to the sun. But numerical examination of the several cases proves conclusively that this cannot have been the case. The relationship of the moon to the earth is, in fact, quite exceptional in the solar system and we have still to rely on such theories as that of Laplace for the explanation of the main outlines of the solar system. I have not yet mentioned the time occupied by the sequence of events sketched out in the various schemes of cosmogony and the question of cosmical time is a thorny and controversial one. Our ideas are absolutely blank as to the time requisite for the evolution either according to Laplace's nebular hypothesis or the meteoritic theory. All we can assert is that they demand enormous intervals of time as estimated in years. The theory of tidal friction stands alone amongst these evolutionary speculations in that we can establish an exact but merely relative time-scale for every stage of the process. Although it is true that the value in years of the unit of time remains unknown, yet it is possible to determine a period in years which must be shorter than that in which the whole history is comprised. If at every moment since the birth of the moon tidal friction had always been at work in such a way as to produce the greatest possible effect, then we should find that 60,000,000 years would be consumed in this portion of evolutionary history. The true period must be much greater, and it does not seem unreasonable to suppose that 500,000,000 to 1,000,000,000 years may have elapsed since the birth of the moon. Such an estimate would not seem extravagant to geologists who have, in various ways, made exceedingly rough determinations of geological periods. As far as my knowledge goes I should say that pure geology points to some period intermediate between 500,000,000 and 1,000,000,000 of years, the upper limit being more doubtful than the lower. Thus far we do not find anything which renders the tidal theory of evolution untenable. But the physicists have formed estimates in other ways which, until recently, seemed to demand in the most imperative manner a far lower scale of time. According to all theories of cosmogony, the sun is a star which became heated in the process of its condensation from a condition of wide dispersion. When a meteoric stone falls into the sun the arrest of its previous motion gives rise to heat, just as the blow of a horse's shoe on a stone makes a spark. The fall of countless meteoric stones, or the condensation of a rarefied gas, was supposed to be the sole cause of the sun's high temperature.

Since the mass of the sun is known the total amount of the heat generated in it, in whatever mode it was formed, can be estimated with a considerable amount of precision. The heat received at the earth from the sun can also be measured with some accuracy and hence it is a mere matter of calculation to determine how much heat the sun sends out in a year. The total heat which can have been generated in the sun divided by the annual output gives a quotient of about 20,000,000. Hence it seemed to be imperatively necessary that the whole history of the solar system should be comprised within some 20,000,000 of years. This argument, which is due to Helmholtz, appeared to be absolutely crushing, and for the last 40 years the physicists have been accustomed to tell the geologists that they must moderate their claims. But for myself I have always believed that the geologists were more nearly correct than the physicists, notwithstanding the fact that appearances were so strongly against them. And now, at length, relief has come to the strained relations between the two parties, for the recent marvellous discoveries in physics show that concentration of matter is not the only source from which the sun may draw its heat. Radium is a substance which is perhaps millions of times more powerful than dynamite. Thus it is estimated that an ounce of radium would contain enough power to raise 10,000 tons a mile above the earth's surface. Another way of stating the same estimate is this: the energy needed to tow a ship of 12,000 tons a distance of 6000 sea miles at 15 knots is contained in 22 ounces of radium. The *Saxon* probably burns 5000 or 6000 tons of coal on a voyage of approximately the same length. Other lines of argument tend in the same direction. Now we know that the earth contains radio-active materials and it is safe to assume that it forms in some degree a sample of the materials of the solar system; hence it is almost certain that the sun is radio-active also. This branch of science is as yet but in its infancy, but we already see how unsafe it is to dogmatise on the potentialities of matter. It appears, then, that the physical argument is not susceptible of a greater degree of certainty than that of the geologists, and the scale of geological time remains in great measure unknown. I have now ended my discussion of the solar system, and must pass on to the wider fields of the stellar universe.

Only a few thousand stars are visible with the unaided eye, but photography has revealed an inconceivably vast multitude of stars and nebulæ, and every improvement in that art seems to disclose yet more and more. It seems useless to consider whether the number of stars has any limit, for infinite number, space, and time transcend our powers of comprehension. We must then make a virtue of necessity, and confine our attention to such more limited views as seem within our powers. A celestial photograph looks at first like a dark sheet of paper splashed with whitewash, but further examination shows that there is method in the arrangement of the white spots. Thus there is order of some sort in the heavens, and although no reason can be assigned for the observed arrangement in any particular case, yet it is possible to obtain general ideas as to the succession of events in stellar evolution. Besides the stars there are numerous streaks, wisps, and agglomerations of nebulosity, whose light we know to emanate from gas. Spots of intenser light are observed in less brilliant regions; clusters of stars are sometimes imbedded in nebulosity, while in other cases each individual star of a cluster stands out clear by itself. These and other observations force on us the conviction that the wispy clouds represent the earliest stage of development, the more condensed nebulæ a later stage, and the stars themselves the last stage. This view is in agreement with the nebular hypothesis of Laplace and we may fairly conjecture that chains and lines of stars represent pre-existing streak, of nebulosity. Change is obviously in progress everywheres as well in each individual nebula and star as in the positions of these bodies relatively to one another. But we are unable even to form conjectures as to the tendency of the evolution which is going on. This being so, we cannot expect, by considering the distribution of stars and nebulæ, to find many illustrations of the general laws of evolution which I have attempted to explain; accordingly I must confine myself to the few cases where we at least fancy ourselves able to form ideas as to the stages by which the present conditions have been reached.

Up to a few years ago there was no evidence that the law of gravitation extended to the stars, and even now there is nothing to prove the transmission of gravity from star to star. But in the neighbourhood of many stars the existence of gravity is now as clearly demonstrated as within the solar system itself. The telescope has disclosed the double character of a large number of stars, and the relative motion of the pairs of companions has been observed with the same assiduity as that of the planets. When the relative orbit of a pair of binary or double stars is examined it is found that the motion conforms exactly to those laws of Kepler which prove that the planets circle round the sun under the action of solar gravitation. A leading characteristic of all these double stars is that the two companions do not differ enormously in mass from one another. In this respect these systems present a strongly marked contrast with that of the sun, attended as it is by relatively insignificant planets.

In the earlier part of my address I showed how theory indicates that a rotating fluid body will as it cools separate into two detached masses. Mathematicians have not yet been able to carry their analysis far enough to determine the relative magnitudes of the two parts, but as far as we can see the results point to the birth of a satellite whose mass is a considerable fraction of that of its parent. Accordingly See (who devotes his attention largely to the astronomy of double stars), Alexander Roberts, and others consider that what they have observed in the heavens is in agreement with the indications of theory. It thus appears that there is reason to hold that double stars have been generated by the

division of primitive and more diffused single stars. But if this theory is correct we should expect the orbit of a double star to be approximately circular; yet this is so far from being the case that the eccentricity of the orbits of many double stars exceeds by far any of the eccentricities in the solar system. Now See has pointed out that when two bodies of not very unequal masses revolve round one another in close proximity the conditions are such as to make tidal friction as efficient as possible in transforming the orbit. Hence we seem to see in tidal friction the cause which may have sufficed not only to separate the two component stars from one another, but also to render the orbit eccentric. I have thought it best to deal very briefly with stellar astronomy in spite of the importance of the subject because the direction of the changes in progress is in general too vague to admit of the formation of profitable theories.

We have seen that it is possible to trace the solar system back to a primitive nebula with some degree of confidence and that there is reason to believe that the stars in general have originated in the same manner. But such primitive nebulæ stand in as much need of explanation as their stellar offspring. Thus, even if we grant the exact truth of these theories the advance towards an explanation of the universe remains miserably slight. Man is but a microscopic being relatively to astronomical space and he lives on a puny planet circling round a star of inferior rank. Does it not, then, seem as futile to imagine that he can discover the origin and tendency of the universe as to expect a house fly to instruct us as to the theory of the motions of the planets? And yet, so long as he shall last, he will pursue his search, and will no doubt discover many wonderful things which are still hidden. We may, indeed, be amazed at all that man has been able to find out, but the immeasurable magnitude of the undiscovered will throughout all time remain to humble his pride. Our children's children will still be gazing and marvelling at the starry heavens but the riddle will never be read.

REMOVAL OF A LARGE PIN FROM THE LOWER LOBE OF THE LUNG BY TRANSPLEURAL PNEUMOTOMY.

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With Notes on the Radiographic Methods employed, by WILLIAM R. FOX, L.R.C.S., L.R.C.P. Edin., *Honorary Physician to the Melbourne Benevolent Asylum.*

(*With Illustrative Plate.*)

I HAVE been unable to discover the record of any case in which the chest has been opened in the free manner employed in this instance for the purpose of extracting a foreign body from the lung and I conclude, therefore, that the features of interest that are presented by it are unique in kind. I am indebted for the earlier notes to Mr. H. W. Bryant, under whose care the boy came in the first instance.

The patient, aged 12 years, was admitted into the Alfred Hospital, Melbourne, under my care on Sept. 12th, 1903, with the following history. Five weeks previously he was sitting in a rocking chair holding in his mouth a large black-headed shawl pin, three inches in length, when the chair was suddenly tilted, and in the effort to save himself the pin disappeared down his trachea without any cough or spasm of the glottis. No symptoms of any kind appeared to have supervened until a week later, when he began to be troubled with a cough, and a week later still the sputa became blood-stained. Three weeks after the occurrence he was examined radioscopically by Mr. W. R. Fox, and the pin was seen to be in the left bronchus, the head lying two and a half inches below the bifurcation, the point projecting into the trachea. It was suggested by Mr. Fox that an attempt should be made to extract the pin with an electro-magnet which he undertook to devise and construct, and as it was thought likely that tracheotomy might be required the patient was admitted under my care into the Alfred Hospital. Without going into unnecessary detail it was found at a subsequent examination made by Mr. Fox that the pin had travelled down into the lower lobe of the lung and that all idea of extracting it through the trachea would have to be abandoned. The boy's symptoms on admission were exceedingly slight; there was a little irritative cough and occasionally a streak of blood was expectorated; there was also a slight irregularity of temperature, which sometimes rose to between 99° and 100° F. at night; otherwise he appeared to be in excellent health and careful auscultation revealed nothing.

On radioscopic examination the following points were noted. The pin was readily seen lying in the lower part of the left lung, the point being directed obliquely upwards towards the trachea (Fig. 1). At each cardiac pulsation the point of the pin rose and fell as though it were resting upon the base of the heart. The position of the head could be easily indicated on the chest wall by examining in two positions, antero-posteriorly and laterally, and marking the spot coinciding with the head in either position. It was then found that when viewed antero-posteriorly the head was about on a level with the eighth rib; when viewed laterally it lay in a vertical plane corresponding to that of the posterior fold of the axilla. The project of extracting the pin through an opening in the chest wall looked as though it should be an easy matter; nevertheless it was novel work, and I had reason to be very glad that before undertaking it upon the living I sought an opportunity of studying the matter in the dead-house.

The results of my experimental investigations with a similar pin and a lung removed from the body were as follows. In the first place, it was clear that the pin had passed into the main bronchus of the lower lobe of the lung, which corresponded exactly with the position of the pin as shown by the rays. Secondly, I ascertained that by grasping the lobe firmly between the fingers and thumb and making a slight rocking movement I was able with a little practice to detect the rigidity caused by the presence of the pin. The observation which was really the most important of all, however, was concerned with the extreme slipperiness of the foreign body in the bronchus. I found that having once grasped the lung containing the pin it would never do to let go or to relax the grasp until the pin was extracted. Anything in the nature of fumbling caused the pin to slip away with great readiness and as it would then be travelling point first, the point being, moreover, in close proximity to the great vessels at the base of the heart, the dangers that might result from maladroit handling were obvious and very real. Upon these considerations the following operation was planned and carried out.

Operation (Oct. 2nd).—The boy being placed on his right side, a free curved incision with the convexity downwards was made and the flap thus marked out was reflected upwards. A portion of the left eighth rib six inches long was then removed from the postero-lateral part of the chest and air was cautiously permitted to enter the pleura through a small puncture. The resulting collapse of the lung was not attended by untoward symptoms and the pleura was opened up to the full extent of the wound. Ample room was afforded; the fingers of the left hand were passed between the lung and the diaphragm, the lower lobe grasped near its root and gently drawn towards the opening. It was now possible to recognise the rigidity caused by the presence of the pin. Maintaining a firm hold with the left hand the position of the head of the pin was ascertained by gently palpating the surface of the lung with the right fingers. A small incision was made in the lung over the pin's head; a sinus forceps, unopened, was pushed in until the pin was felt and by hitching the instrument under the neck of the pin the head was easily lifted out of the wound and the pin was withdrawn. There was no hæmorrhage but it is a notable circumstance that abscess formation had already begun round the foreign body, for when the head of the pin was reached a small quantity of pus (10 or 20 minims) escaped. No suture was put into the very small wound in the lung. The flap of integument was replaced and sutured with the exception of about two inches in the middle. This was left unclosed by sutures and a piece of oiled silk protective was laid over it before the dressings were applied; by this means free escape of air from the pleura was insured, while the piece of protective by its valvular action would impede the passage of air back into the pleura and thus encourage the expansion of the lung. Immediately after the operation there was great restlessness, which was relieved by a small dose of morphine, and for two or three days there were some dyspnœa and general distress, which, however, steadily diminished. There was also moderate fever, the temperature ranging between 99° and 100°, and examination of the chest revealed very

general consolidation of the lobe from which the pin had been extracted. By the fourth day, however, convalescence fairly set in, the temperature became normal, the appetite returned, and all discomfort vanished. The wound in the chest wall did not pursue a strictly aseptic course and there was some suppuration about the stitches. This I attribute to accidental infection from the pus round the pin during the operation. Happily no suppuration of the pleura took place and healing progressed kindly and rapidly under a moist dressing, so that the boy was able to leave the hospital perfectly well 12 days after the operation. The very difficult problem of photographing so slender an object as a pin while it was subject to constant movement produced by both the cardiac and respiratory cycles was solved after one or two attempts by Mr. Fox, but it will be readily understood that the photograph does not depict the foreign body with the striking clearness with which it was viewed by means of the fluorescent screen.

Remarks.—There is obviously a very broad distinction to be drawn between the procedure here described and the exceedingly difficult and unsatisfactory attacks that have been made on the large bronchi through the mediastina. The transpleural method used in this case will certainly be occasionally employed in the future, thanks to the aid the surgeon is now enabled to claim from the skiagraphist, and one can conceive of no more brilliant illustration of the value of radiography in surgery. Other features that appear to me specially noteworthy are: (1) the fact of abscess formation having already commenced; (2) the lobar consolidation subsequent to the operation; and (3) the suppuration of the chest wall without suppuration of the pleura, although the two structures were in widely open communication with one another. Finally, I would venture strongly to urge upon any surgeon who contemplates a procedure of this nature that a little special *tactus eruditus* acquired beforehand in the dead-house will prove invaluable.

Notes by Mr. FOX.—This patient was sent to me for x ray examination by my friend Mr. Bryant on August 27th, 1903. A shawl pin had disappeared in the circumstances detailed in Mr. Russell's account of the case and it was thought that it had been swallowed. Examination by the x rays at once showed this supposition to be incorrect and revealed the shawl pin lying in the left bronchus. It was then over three weeks since its disappearance. As its point was in the trachea near its bifurcation it was thought that it might be possible to remove it through an opening made into the trachea below the isthmus. As the point of such a pin is, however, a very difficult object to be grasped by, and extracted in, the jaws of a pair of forceps I formed the opinion that it might be practicable to use a powerful electro-magnet in the event of forceps failing to extract it. Experimental investigation, however, showed that an electro-magnet of diameter sufficiently small not to occlude seriously under an anæsthetic the small trachea of a boy 12 years old possessed an inadequate magnetic pull unless exerted over a sufficiently large surface of the object to be removed. Now the position of the pin was such that it practically presented its point to the electro-magnet, and the fact that the magnetic lines of force had thus to act upon a point, combined with the limited size of the magnet itself, rendered it impracticable to remove the pin in this way. Experiments carried out with a very large Haab magnet and iron extension pieces suitable for pushing down the trachea to reach the pin proved this to possess no greater power. The idea of utilising an electro-magnet had thus to be abandoned.

It was then determined to endeavour to extract it by the tracheal route by means of ordinary forceps and as Mr. Bryant was leaving Melbourne for a week or two the case was kindly taken in hand by Mr. Russell and admitted to the Alfred Hospital, with the excellent and highly gratifying result recorded. Another x ray examination was then made with this view, when it was found that meantime the pin had found its way so much farther down the bronchus that it had become impracticable to reach and to extract it through a tracheal opening. The pleural route was then determined upon and I was asked to locate exactly the round glass head of the pin. To do this I adopted a method the principle of which is precisely similar to that I advocated in a former issue of THE LANCET[1] and which I have employed on numerous occasions since. It consists of ascertaining the exact position of two straight lines in the same plane intersecting one another at right angles, the point of intersection being occupied by the object to be located. The most suitable plane for these lines to be in is one at right angles to the axial line of the body. This affords the easiest and most useful measurements. This plane is represented in the diagram (Fig. 2), in which A B and C D are the two lines at right angles to each other. The line A B is found by taking two small circular discs of lead and attaching them to the skin by means of fish-glue or some similar material. By means of the x rays and a fluorescent screen these two metal discs are moved about, sliding them on the surface of the skin until the disc at A, the head of the pin at E, and the other disc at B are all in one straight line (A B). Such a line to be in the above-mentioned plane should be, with the patient standing, as nearly as possible a horizontal one. The discs A and B are so placed that A B is a true antero-posterior line. In an exactly similar manner the line C D is mapped out, this being also a horizontal line at right angles to A B and extending from side to side instead of antero-posteriorly. Now F G is a line drawn parallel to A B and passing through C, while G B and F A are each parallel to C E. Now F A = G B = C E, which is the depth the head of the pin E is in the cavity of the thorax from the position of the disc at C. From this it should be quite clear that C (which in this particular case is the nearest point to the object sought) gives the position where the opening into the pleura should be made and the requisite amount of rib in that location excised, while C E (or what is the same thing, G B or F A) gives the depth the operator must go in the direction of D to reach the head of the pin. The collapse of the lung on opening the pleura in this case of course alters the position of the pin in the thorax, but that can scarcely be held to vitiate the method of location.

An attempt to photograph the pin in position was at first a complete failure, no pin showing in the photograph, although it was very plainly visible on the screen. The fault lay in the free movement of the pin with the lung during respiration and by controlling diaphragmatic action and stopping this up-and-down movement a good photograph was at once obtained.

A curious point about this case that should be noted is that the pin fell into the left bronchus and not into the right. It is a well-known fact that when a foreign body enters the trachea and falls below its bifurcation it nearly always enters the right bronchus, rarely the left. In the event of no signs or symptoms being present (as in this case) to indicate its position and in the absence of an x ray examination one can easily imagine a surgeon who suspected that it had dropped down the trachea diligently but vainly exploring the right bronchus. The case is altogether an excellent illustration of the immense assistance x ray examination affords in suitable cases to the operating surgeon.

Melbourne.

[1] THE LANCET, Sept. 21st, 1901, p. 784.

THE PATHOLOGY AND TREATMENT OF ECLAMPSIA.

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THERE is no more interesting subject in the whole range of obstetric medicine than eclampsia, and yet, despite the recent advances in every department of medical science, our knowledge of convulsions occurring in pregnancy, during labour, and after delivery, is still anything but accurate, defined, or scientific.

THE PATHOLOGY OF ECLAMPSIA.

Two views at present hold the field as to the pathology of eclampsia. 1. Our present position, according to one view, corresponds to that of our predecessors in the last century in reference to dropsy. We call convulsions associated with pregnancy, labour, or the lying-in period eclampsia, but just as in the case of dropsy closer observation and more accurate post-mortem evidence showed that there were several morbid conditions underlying that clinical term, so in the case of eclampsia some believe we have included in it a number of disease entities, each due

to a different pathological lesion. The old view—that eclampsia depends on poisoning of the nerve centres by certain by-products which the kidney, owing to its abnormal condition, fails to eliminate—is now practically abandoned; indeed, if one special pathological condition is to be admitted as connected with eclampsia it would not be a lesion of the kidney but rather of the liver. At the Congress of Obstetrics and Gynecology in 1896, at Geneva, I saw for the first time microscopic sections exhibiting changes in the liver cells associated with eclampsia. These were shown by Professor Lindfors of Upsala. Bouffe de Saint Blaise, in his "Thèse de Paris, 1891, Lésions anat. que l'on trouve dans l'Éclampsie," tells us he found hepatic lesions in 42 consecutive cases and Schmorl[1] discovered them in 71 out of 73 necropsies. J. Whitridge Williams in his text-book of obstetrics says he has been able to demonstrate similar lesions in all the eclamptic livers examined by him, and he gives a figure showing that these hepatic lesions consist in irregularly-shaped red or white areas of necrosis caused by degenerative changes following thrombosis of the smaller portal vessels. All agree that in eclampsia the main post-mortem lesions are in the kidney, liver, and the brain, and while pathologists at present tell us that of these changes the most characteristic are in the liver, there is a doubt whether such morbid conditions are primary or secondary: the majority of observers hold that nearly all post-mortem changes in eclampsia are secondary. 2. The second view is that eclampsia depends upon a poison, a toxin or series of toxins manufactured by the mother and fœtus, and that the various changes found post mortem are really caused by the over-accumulation and non-elimination of these toxins. Now it must at once be admitted that no one has hitherto been able to isolate any of those toxins which may be said to be the specific cause of eclampsia. For the present the "toxæmia" view is the popular one, and while it may be accepted provisionally as a good working hypothesis and while there is considerable clinical and post-mortem evidence to support this view, it must be candidly admitted that scientific proof of the existence of the specific causation of eclampsia is still wanting. We are making progress by showing that older theories have become untenable, and, perhaps, in the future, as the result of combined clinical, chemical, and laboratory investigation, we may find a solution of a most interesting and engrossing problem. For the present, Zweifel's dictum still holds that eclampsia is "the disease of theories."

Certain points in the etiology of eclampsia must, however, be borne in mind by those who are seeking for an explanation of the condition which will cover all the facts.

1. Why is eclampsia so common in primiparæ and especially among those who are young or old? My own experience bears out Professor Schauta's statistics that there are nearly five times as many cases among primiparæ as among multiparæ. As to age, Dührssen, out of 195 cases of eclampsia, found 40·5 per cent. were either below 20 or over 30 years of age. To say, as an explanation of the fact, that primiparæ are more liable to eclampsia than multiparæ that their nervous system is more impressionable, and that pregnancy brings out any flaw in their constitution, is a mere begging of the question.

2. Why is eclampsia commoner in certain districts than in others? In the recent discussion on Dr. Robert Boxall's paper on the Treatment of Albuminuria and Eclampsia occurring in Pregnancy, which was read at the Leicester meeting of the British Medical Association, Dr. C. E. Purslow of Birmingham said he had only three cases of eclampsia in 6400 labours. As the general death-rate from puerperal convulsions was 0·3 per mille for Birmingham, his own district must be comparatively immune. At the Rotunda Hospital there were 56 cases of eclampsia among 20,000 patients, a proportion of 1 in 357. When collecting statistics for a paper read at the 1898 International Congress of Obstetrics and Gynæcology at Geneva I was much struck with the fact that certain parts of the United Kingdom had in a marked degree more cases of eclampsia than other districts. Does any other complication of pregnancy show such a remarkable variation in its occurence in some parts of the country more than in others?

3. Why is eclampsia commoner in certain years? Is this a mere coincidence and would such observations be different if we made records throughout longer periods, say fifty years instead of five or ten?

4. A most important point in the etiology of eclampsia is the part played by the fœtus. It is surely a very remarkable circumstance, to which attention was first drawn by the late Professor Winckel, that when, during pregnancy, the fœtus dies, even in the case of a woman who has what we term the premonitory symptoms of eclampsia, the danger for her is entirely overcome or very much diminished. Many years ago, before I was aware of Winckel's observation, I was much struck with this fact. I was asked to see a young primipara with the idea of bringing on labour. She was in the eighth month of pregnancy and had for a week been suffering with severe headache and occasional vomiting. The urine had been gradually diminishing and two days before I saw her it was, when examined by her medical attendant, almost solid on boiling. There was œdema of the face and limbs. At our consultation the patient said that for the past day and night she had been unable to feel the child's movements and neither her own medical man nor I could hear the fœtal heart, nor could we discover the active movements of the fœtus. We decided to induce labour, but the patient was anxious that her mother should be with her and so we decided not to interfere until the next day when her mother was present. On the next day the patient said she felt better, the œdema was diminished, the urine had increased and was less albuminous, and under these circumstances we decided to wait. The patient steadily improved and a week later, after a natural labour, gave birth to a dead fœtus whose skin was peeling. All albumen had now disappeared. She has since had three living children and no return of any of the symptoms as observed in her first pregnancy. I have seen since several similar cases and I called special attention to this point at the Geneva congress in a paper introducing the question of the treatment of eclampsia. In the discussion which followed Professor Morisani (Naples) and Professor Pasquali (Rome) took part. The former stated that before deciding on obstetrical intervention it was necessary to ascertain whether the child was alive or dead, as he had on several occasions proved that the death of the fœtus put an end to the convulsions and the albuminuria. Professor Pasquali said he had found that the death of the child checked the eclampsia, and he confirmed the view put forward by me by stating that this fact suggested the question whether the fœtus does not play a rôle in the etiology of such a dangerous complication.

As further evidence in support of the view that the fœtus is an important factor in the rôle of the causation of eclampsia I may mention the following two points. In twin pregnancy there is a greater risk of eclampsia; statistics showed that while there is one twin pregnancy to 13 normal pregnancies in eclampsia there was only one twin pregnancy to 80 in pregnant women generally. Two French observers, Baron and Castaigne,[2] have shown that the transmission to the mother of substances injected into the fœtus ceases almost immediately after its death.

THE TREATMENT OF ECLAMPSIA.

For the sake of clearness, and accepting the toxin view as a working hypothesis, we may consider the treatment of eclampsia under the following heads:—1. How can the convulsions be treated? 2. How is the poison which is assumed to cause the fits to be eliminated? 3. What is the best way to manage the patient from an obstetric point of view? 4. When certain symptoms set in which make us fear the occurrence of eclampsia, what is the best treatment to adopt?

1. *Treatment of the convulsions.*—The patient, the subject of eclampsia, should be placed on her side (not on her back) with the head low. In this way fluids from the mouth do not tend to get into the larynx or lungs and so we try to avoid one of the morbid conditions so often seen in fatal cases of eclampsia—œdema of the lungs. The handle of a toothbrush or of a spoon covered with linen should be placed between the teeth at the first indication of an approaching fit to prevent injury to the tongue. A cork is sometimes used but it should never be employed because with the patient's movements small pieces may be bitten off and carried into the air-passages. If the patient is conscious a rapidly acting purgative such as five grains of calomel, a drachm of compound powder of jalap, or a drop of croton oil

[1] Path. Anat. Untersuchungen über Puerperal-eklampsie. Leipsic, 1893.

[2] Contribution à l'Etude de la Pathogénie de l'Eclampsie Puerpérale, etc., Archives de Médecine Expérimentale et d'Anatomie Pathologique, 1898.

mixed with butter and placed upon the back of the tongue may be administered. If the patient is unconscious the following is the plan now pursued at the Rotunda Hospital. I quote from the last report of Mr. E. Hastings Tweedy, the master: "We pass a stomach-tube through the mouth in the event of our patient being deeply unconscious and through the nose if she be in a state of semi-consciousness. In the former condition the soft palate fails to respond to the stimulation of the nose tube and the latter is in consequence much more likely to be passed into the trachea than through the œsophagus. By means of this tube the stomach is thoroughly washed out. Into the stomach is then poured, by means of the tube, a quart of slightly saline hot water, together with castor oil, elaterin, croton oil in four or five drop doses, or some saline purgative, according to the predilection of the operator." During the past ten years I have abandoned the use of chloral and chloroform for the convulsions and used instead morphine on the plan suggested originally by G. Veit. I give half a grain of morphine hypodermically when the fits commence followed by one-quarter grain doses as often as is found necessary to control the fits, the idea being simply to keep the convulsions in check. I have given two grains in this way in a period of 24 hours. Of course, each case must be watched carefully, and smaller amounts of the morphine will do in some cases than in others, but I feel that, owing to the teaching in reference to the use of morphine in Bright's disease, many medical men are afraid to use morphine so freely as it may be used in eclampsia. Very often a grain is all that is needed in divided doses to stop the fits. The great advantage of morphine over chloroform for the treatment of the fits is that it does not depress the heart. According to some authorities, another benefit of morphine is that while it is being administered it arrests metabolism. At the same time the patient's bowels are also evacuated by frequent enemata of soap and water with castor oil. Saline enemata may also be given but I prefer the subcutaneous injection, under the breasts, of saline solution. I have tried bleeding with the subsequent injection of the saline solution directly into the veins but do not think the results better than those following the subcutaneous injection into the areolar tissue. I have entirely abandoned the use of pilocarpin but I have seen benefit follow the use of the hot pack, though the present teaching of the Rotunda is against either it or any diaphoretic.

2. *Methods of eliminating the poison.*—This is best done by free purgation either by the mouth or by enemata, by saline infusion, by the hot pack, and by the non-administration of liquids.

3. *The obstetric management of eclampsia.*—Here we at once find recommended among obstetricians the most opposite lines of practice. The present teaching in the Rotunda is reverting to the view held by the older obstetricians, who advised treating the convulsions and letting the labour alone. In his last report (for 1903–4) the present master of the Rotunda writes: "Labour is never induced, nor is its onset to be desired. Should it unfortunately occur its progress is seldom interfered with. In the one case in which we departed from this rule the convulsions seemed to be rather aggravated than diminished by the complete delivery." On the other hand, Dührssen, and still later Bumm, as well as Leopold, profess by immediate delivery to have obtained good results, the method being mainly forcible dilatation of the cervix by incisions or dilators followed by emptying of the uterus as soon as it can be done after the onset of the fits. What line of practice is to be recommended with such contradictory advice? One thing is clear: no one but an expert obstetric operator who is accustomed to do abdominal and vaginal gynæcological work could attempt to try, as a routine practice in every case, the immediate emptying of the uterus, and even according to statistics the results seem better with the morphine plan. My own method is as follows:—When the convulsions occur in pregnancy, labour not having set in, I give the morphine, with purgation, and saline infusion and let the patient alone obstetrically. If, however, labour has set in I think it should be shortened by forceps under chloroform when the cervix indicates that this can safely be done. Suppose, however, that in spite of the morphine treatment the patient gets steadily worse, then I think we are justified in terminating the labour by emptying the uterus, using Bossi's dilator, followed by forceps or any other method that can be employed, acting as in the case of any patient whose state seems to indicate that the labour should be terminated with as little delay and as little disturbance as possible.

4. *Prophylaxis of eclampsia.*—In a pregnant woman we fear the onset of eclampsia when the principal eliminating organs—the kidneys—are not acting properly, this being evidenced by albuminuria and diminution in the amount of urine and urea excreted. Even before such premonitory symptoms as headache, giddiness, disturbance of vision, or severe epigastric pain have set in, we should endeavour to ward off an attack of convulsions. The patient, clothed in flannel, should be kept in bed, have a warm bath every night, and a free action of the bowels every day (cream of tartar, compound senna mixture, or compound powder of jalap may be given). She should be kept mainly on a milk diet with vegetables, bread-and-butter, and stewed fruit, and have plenty of fluids, plain water and mineral waters, to drink. If this plan is thoroughly carried out most cases will not develop convulsions.

While every case of eclampsia must be treated *per se*, I would recommend the following methods if the attack cannot be warded off:—

1. Treat the convulsions with morphine used subcutaneously. Keep the patient on her side, purge freely in the method recommended, use saline infusion, allow no liquids; in a word, as Gooch advised long ago, "take care of the convulsions, and let the uterus take care of itself."

2. Make an effort to eliminate the poison by purgation, hot packs, and by saline infusion.

3. If labour has not set in treat the convulsions but do not induce premature action of the uterus. If labour has begun and the patient is in the second stage and the os dilated give chloroform and deliver by forceps if possible, or by turning. If, however, morphine and purgation with saline injections have been tried and the patient is not improving, dilate the cervix and deliver.

4. For the convulsions after delivery use morphine, purgatives, and saline infusion.

5. In the prophylaxis of eclampsia rest, milk diet, warm baths, and purgatives are the best methods.

Belfast.

A CASE OF TUMOUR OF THE CAUDA EQUINA REMOVED BY OPERATION, WITH REMARKS ON THE DIAGNOSIS AND NATURE OF LESIONS IN THAT SITUATION.

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THE twelfth dorsal spinous process and the space below it are opposite the sacral segments of the spinal cord and thus the origin of important nerves is located within a very small extent of nervous matter. From this fact, and since the central nervous system is incapable of regeneration, injury or disease to this part readily causes a maximum amount of destruction and little can be expected from surgical or, indeed, other forms of treatment. The great leash of nerve roots forming the cauda equina arising from the lumbar and sacral segments of the cord occupies, on the contrary, a long vertical extent and the pathological processes affecting the roots often only cause a partial, and if capable of removal, a recoverable form of injury. Hence surgical interference which is easy may also be attended with very considerable and even complete success. The symptoms are necessarily very similar whether the lesion is in the nerves or in the spinal medulla from which they take their origin.

Injury and disease in these two situations are not infrequent and it is therefore of much practical importance to be able to say whether the site of the morbid condition is in the cord (the conus medullaris) or in the cauda equina. I relate first a case of tumour implicating and limited to the cauda equina and afterwards give some account of the diagnosis and nature of the lesions met with in these situations.

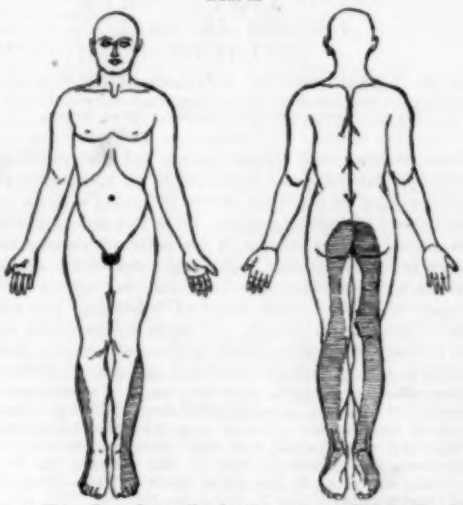
I am much indebted to Dr. John Owen, the medical tutor

at the hospital, for many careful notes on the condition of the patient.

The patient, a laundryman, aged 36 years, was admitted to hospital on August 4th, 1904, on account of pain in both thighs and weakness of the lower limbs. He had suffered from the pain for about five months; the loss of power had developed later. Four years ago he contracted gonorrhœa followed by stricture of the urethra. On one occasion retention of urine had to be relieved by suprapubic puncture. Beyond this no history of illness could be elicited. Syphilis was denied and there was no evidence of it. The father had died from a "tumour of the brain" at the age of 55 years. The mother, three brothers, and five sisters are living and in good health. The patient looked ill and worn and evidently suffered greatly; he was anæmic and somewhat emaciated. He weighed 9 stones 4 pounds. The heart and lungs were normal. Nothing could be detected on palpation of the abdomen or by digital examination of the rectum. The urine was of specific gravity 1016; it contained no albumin or sugar.

The following is a description of the symptoms present. There was severe, spontaneous, shooting pain, often worse at night. It started about the middle line at the level of the highest part of the sacrum, passed downwards over both buttocks and the posterior surface of the thighs and outside of the legs as far as the ankle, but did not invade the feet. The pain was much worse when he lay on either side or on the face and was then referred especially to the lower part of the sacrum. There was sharp pain on flexing the thigh on the pelvis (sign of Lasègue), but no particular pain on pressing the muscles of the thigh or legs or along the course of the great sciatic nerve or at the points of Valleix.[1] The first, second, and third lumbar spines were somewhat uniformly prominent; no pain was caused by percussing these or by vertical pressure or by lateral pressure through the iliac crests. There was, however, considerable rigidity of the lower part of the spine. In bending backwards, forwards, or laterally, whilst the upper part of the spine moved the lower portion remained immobile and the resulting movement was one of the trunk together with the pelvis on the thighs. There were considerable loss of power in both lower limbs, more markedly so on the left side, inability to raise the left thigh against the least resistance, and weakness in the flexors of the leg and the thigh and in

FIG. 1.

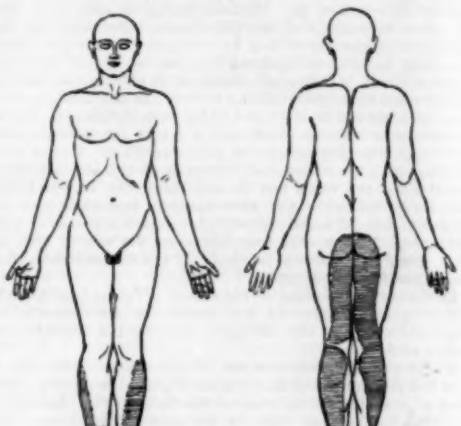


August 17th. Loss of sensation in the areas supplied by the fifth lumbar and all the sacral roots.

the muscles moving the feet, though none of these movements were absolutely paralysed. Thus there seemed to be weakness in all the muscles supplied by the lumbo-sacral plexus. All the muscles reacted to the faradic current but to a less extent on the left side. The knee-jerks were both brisk but the ankle-jerks were absent. The plantar reflexes were present though difficult to elicit. At times the reflex was a quick extensor reflex and at others the flexor type predominated. Micturition was normal but the patient stated that he had not as good control over the action of the bowels as formerly; he had to go to stool quickly in order to avoid soiling himself. On examining the rectum digitally the sphincter ani contracted fairly forcibly on to the finger and the rectum appeared to be dilated and ballooned. The patient also stated that he did not feel the examination. There was marked loss of sensation to touch and pain in the areas figured on the chart (Fig. 1). Light touches with the blunt head of a pin were not recognised at all and a pin prick was recognised as a dull, just perceptible sensation. This anæsthesia invaded, as figured, the penis, scrotum, and perineum. As regards the sexual organs, testicular sensation was preserved but there had been neither erections nor emissions for six months.

In the course of a fortnight the symptoms were considerably more defined and permitted an accurate analysis to be made. The motor weakness was bilateral, rather more on the left than on the right side. There was great increase in the weakness of the movement of the feet, which soon became absolutely powerless. On the other hand, the extensors of the legs—the quadriceps group—and the extensors and external rotators of the thighs, though somewhat weaker than

FIG. 2.



August 29th. The anæsthesia appeared in the fourth lumbar area.

natural, acted with moderate force, so that the leg could be raised from the bed. Abduction of the thighs was well performed. The biceps femoris was felt to contract but feebly. The semitendinosus and semimembranosus also contracted and apparently not with greatly diminished force. The muscles of the legs were somewhat but not greatly wasted. There was no reaction of degeneration, though the faradic irritability was diminished in all the leg muscles. The ankle-jerks remained absent; the plantar reflex could not now be obtained. The left jerk had gradually diminished and on August 29th it was absent. The right knee-jerk was brisk and on tapping the quadriceps tendon a lively contraction of the adductors on both sides occurred. The abdominal and cremastic reflexes were brisk. On the 23rd the patient first complained of some difficulty in passing urine, stating that he had to strain. Retention set in a few days later necessitating the use of a catheter, which the patient was unable to feel. Enemata were required; there were also involuntary passage of fæces and total loss of sensation of the act. The anus was patulous. The inner sides of the legs were now becoming anæsthetic (see Fig. 2), the area of loss of sensation in this zone being fairly well defined and more marked for pain than for touch. The pain remained very severe, necessitating the continual administration of morphine.

[1] Those places along the course of nerves which in neuralgia are painful on pressure.

The diagnosis of tumour of the cauda equina was made and an operation was performed by my colleague, Mr. R. W. Murray, on Sept. 2nd. The spines and laminæ of the second, third, and fourth lumbar vertebræ were removed. On opening the dura mater a red, soft looking mass about an inch long was seen surrounded by the nerve roots. It bled very readily when the attempt to remove it was made but a considerable portion was removed. Subsequent examination showed the tumour to be an endothelioma or hæmorrhagic angiosarcoma (see Fig. 3). Rather unexpectedly the patient

FIG. 3.

Microscopical appearance o section of growth removed.

improved considerably and regained the power of walking with the aid of sticks, the knee-jerks returned, and the anæsthesia greatly diminished, but the state of the bladder and rectum did not improve. The pain also was very much relieved. Unfortunately at about the end of three months symptoms began to return and pain became again very severe. There could be little doubt from the histological examination that the tumour was malignant and that it had rapidly grown again.

A second operation was thought to offer some slight chance of further relief, but on exposing the nerves it was found that the tumour had grown enormously and was now from two to three inches long. As the condition was obviously incurable Mr. Murray and I considered it justifiable to divide a number of posterior roots. The patient remained till death completely paralysed in the lower limbs and shortly after the operation pain, which had eased for a time, returned with great severity.

Remarks on the nature and diagnosis of diseases in this situation.—The distribution of the roots, forming respectively the lumbar and sacral plexuses, is now fairly well agreed upon. The lumbar roots form the anterior crural and obturator nerves and supply the quadriceps extensor group and the adductors of the thigh; their sensory distribution is on the front and sides of the thigh and inner side of the leg. It is obvious that in the case of my patient the functions of these nerves were unimpaired and that the lesion was one interfering with the functions of the sacral plexus. Such an extensive bilateral affection, nearly symmetrical, could be explained only by a lesion of these nerves, either where they are situated close together forming the cauda equina, or by implication of their centres of origin in the lowest part of the cord itself—viz., the conus medullaris. This term has been arbitrarily fixed to include that part of the cord which lies between the origin of the second and third sacral nerves to its termination, a definition which is convenient, since injury limited to it implies either a total or partial integrity of the lumbar nerves and, further, since it is a clinical fact that lesions of the cauda equina invade chiefly the sacral roots. Anatomically, indeed, the cauda equina includes the great leash of nerve roots which form both the lumbar and sacral plexuses, but for the reasons just mentioned its use clinically is restricted to the roots forming the sacral plexus.

A table given by Raymond,[2] constructed from clinical data, shows precisely the distribution according to that author of the last lumbar and first five sacral segments of the cord or the corresponding roots (see table). With regard

	Raymond's Table.			*Sensory Supply according to Seiffer.*
—	Motor.	Sensory.	Reflexes.	
5th L. (abd.)	Glut. med. and min., tens. fasc. femoris, semimemb., semitend., biceps.	Outer side of thigh.	—	Ext. surface of leg, dorsum of foot, sole of foot.
1st S. (ext. rot.)	Pyriformis, obt. internus, gemelli, glut. max.	Posterior surface of thigh and leg.	Plantar.	Ext. surf. of leg, dorsum and sole of foot; outer part of posterior surface of leg.
2nd S.	Tib. ant., peroneal muscles, centre for erection.	External surface of leg and of foot, sensation of bladder and upper part of rectum.	—	Median part of posterior surface of thigh.
3rd S.	Centre of ejaculation, ischio- and bulbo-cavernosi.	Sensation of urethra, penis, and scrotum.	—	Penis, scrotum, vulva, perineum, and region of buttocks.
4th S.	Muscles of bladder.	Perineum, sacral region.	Ankle jerk.	An oval area including the region of sacrum as far as the anus.
5th S.	Levator ani, sphincter ani.	Coccygeal region, anus.	Anal.	—

to the sensory areas given in this table, I prefer to accept the scheme given by Seiffer,[3] made from a comparison of the many clinical observations on this subject, and place his statements adjoining Raymond's table. These areas are very much in agreement with those recorded in a valuable paper by Dr. C. R. Box,[4] who has described the symptoms produced by a tumour of the cauda equina, in which the fifth lumbar roots were the first affected, producing anæsthesia on the outer side of the leg, the dorsum, and most of the sole of the foot; thence the growth of the lesion produced symptoms indicating invasion of one root after another in both an upward and a downward direction. In the case of my patient the anæsthesia involved all the areas of the sacral and the fifth lumbar roots, whilst the muscles belonging to the upper roots were not much affected. At a later period the appearance first of anæsthesia of the inner side of the leg and then of the loss of knee-jerks showed that the fourth and third lumbar roots were being invaded by the growth.

The diagnostic problems were: 1. Is the lesion in the cord (the conus medullaris) or the cauda equina? 2. What is its nature? The symptoms must necessarily be very similar, since the muscular paralysis, sensory disturbance, and affection of the bladder or rectum may be equally produced by a nuclear (spinal cord) or radicular lesion. It is therefore only by a consideration of the collateral circumstances that a diagnosis can be made. Excluding for the present external injury as a cause, the writings of Raymond[5] and Sippy[6] indicate the following points as being in favour of a lesion of the roots. 1. An insidious onset with general development and progression of symptoms. The conus medullaris gives origin from a very small extent to many nerves and hence a lesion primarily affecting it would rapidly produce its maximum amount of damage. 2. Pain, violent in nature, spontaneous or excited by change of position or by movement, is in favour of a radicular lesion; moderate pain may be present in either condition. 3. Pain over the vertebral column below the level of the second lumbar spine, exaggerated by percussion and radiating towards the lower limbs, is in favour of a lesion of the cauda equina. To this I am inclined to add rigidity of the lower part of the spine due to irritation of the nerves of the dura mater. Pain higher up, increased by pressure and not radiating very clearly over the lower limbs, is in favour of a medullary lesion. The sign of Lasègue (pain on flexing the

[2] Nouvelle Iconographie de la Salpêtrière, vol. xv., p. 471, 1902.
[3] Archiv für Psychiatrie und Nervenkrankheiten, Band xxxiv. Heft 2, 1901.
[4] THE LANCET, Dec. 5th, 1903, p. 1566.
[5] Loc cit. and Nouvelle Iconographie de la Salpêtrière, p. 65, 1895; Handbuch der Pathologischen Anatomie des Nerven systems, p. 1062, Berlin, 1903.
[6] Journal of Nervous and Mental Diseases, p. 108, 1902.

thigh with the leg extended on to the pelvis), though it may be absent, is a further indication of a radicular lesion. 4. An asymmetrical development is a radicular symptom and is perhaps especially suggestive of an extradural lesion; remission of symptoms, especially amelioration in the condition of the bladder and rectum, and the slow appearance of muscular wasting, of the reaction of degeneration, and of trophic disturbance are also in favour of an affection of the cauda equina.

The symptoms produced by disease or injury in either of these situations on the bladder, rectum, and external organs of generation are important. We know chiefly from the work of Langley and Anderson that these organs receive a double innervation, one from the lower dorsal and upper lumbar roots through their white rami to the sympathetic and the other from the pelvic splanchnic or nervus erigens from the sacral roots. The exact functions of these two sets of fibres is not certainly known, but clinically an affection of the conus medullaris or its roots is attended by both motor and sensory paralysis of the bladder and rectum. This was so in the case recorded by Osler[7] in which a syphilitic gummatous process was limited to the third, fourth, and fifth anterior and second and third posterior sacral roots. Erection of the penis is also usually absent in these lesions. Hence the sacral centre is the more important. Raymond remarks and indicates in his table that the nerves of sensation are given off from a higher part of the cord than those of the muscles of the bladder and rectum; hence the two forms of paralysis are not always associated, as in one of the cases quoted by Raymond where there was incontinence of urine without any anæsthesia. The reverse condition was present in a case recorded by van Gehuchten[8] of damage to the conus in which with complete control over the sphincters and with the urine voided in a nearly natural manner the mucous membrane of the urethra and bladder was absolutely anæsthetic. Van Gehuchten,[9] indeed, draws the inference from this case that the sympathetic ganglia can function quite independently of the central nervous system. But it may be that in such a case the activity of the lumbar centre is sufficient. More difficult to explain is the fact that erections of the penis also occurred, although this organ was absolutely anæsthetic and presumably the sacral centre had been completely destroyed. The acts of ejaculation of semen and forcible expulsion of the last few drops of urine depend on the contraction of the bulbo- and ischio-cavernosi muscles and are always paralysed if the lowest sacral part of the cord or the corresponding roots are damaged; hence van Gehuchten concludes that it is only with unimpaired capacity for these actions and in the persistence of the anal reflex that the diagnosis of integrity of the conus medullaris and the corresponding roots can be made.

Nature of lesions of the cauda equina.—Dufour in his work, "Contribution à l'Étude des Lésions des Nerfs de la Queue du Cheval du Cone Terminal," in 1896 collected and analysed nearly 100 cases of lesions of the cauda equina, the great majority of these being traumatic; next in frequency came tumours, then forms of meningitis with or without hæmorrhage, tubercle, and syphilis.

Trauma.—Injury limited to the cauda equina is rare; usually the terminal part of the cord is also implicated. The site of the lesion is of much importance. Van Gehuchten,[10] who has analysed Dufour's cases, gives the following conclusions: 1. If no injury of the vertebral column is found it is probable that the medulla spinalis will have been injured. 2. In injuries of the first lumbar vertebra or above the conus medullaris is alone affected. 3. Injury to the second lumbar vertebra may cause damage to either the cone or the cauda equina, since the level at which the cord terminates varies; in lesions at this site injury to the cone cannot be excluded. 4. Injury below this level causes damage to the cauda equina.

Tumours.—These may take origin from the bones or meninges, from the cord or nerves, and may be extra- or intra-dural. Sarcoma and carcinoma seem the varieties most frequently met with, but fibrosarcoma, neuromata, glioma, lymphangioma, and myolipoma have been found. Dufour collected 21 cases; in only one had an operation been performed and this was successful (Laquer and Rehn). Since then several cases of very successful removal have been recorded—two cases of extradural sarcoma by Sachs[11] and an extradural endothelioma by A. Starr.[12] A further case operated upon is recorded by Frankel.[13] The patient died two months later after some temporary improvement. The tumour was a red pultaceous mass, microscopically a sarcoma. Putnam and Elliot[14] relate a case of extradural carcinoma which was removed. The patient also died in about five months, probably from a growth in the brain. This tumour, however, attacked the lower part of the cord rather than the cauda and as it could not be completely removed and the pain was agonising two nerve roots on each side were deliberately divided. The authors remark: "It might be justifiable to divide the cord above the new growth, so imperative was the need of relieving the extreme suffering." At a meeting of the Neurological Society on Oct. 27th, 1904, Dr. Ferrier and Sir Victor Horsley showed a patient from whom a fibromyxoma comprising the conus and cauda equina had been removed with marked success.

The diagnosis of tumour can only be made from the history, usually a considerable duration, and the progressive uninterrupted march in the severity of symptoms. At times, as in my case, the progress may be very rapid, a feature, of course, depending on the nature of the growth.

Hydatid cyst.—All the eight cases collected by Dufour occurred in women; in one the tumour presented as a fluctuating mass through the laminæ and another is noticeable on account of a remarkable remission of symptoms. In one many cysts invaded the central nervous system.

Meningitis and neuritis.—Under this head are cases of varying pathology. Only a few have been recorded; undoubted instances of syphilitic gummatous meningitis have been recorded by Osler and Westphal. This part of the nervous system may also be invaded by tubercle. Dr. Ferrier and Mr. Ballance showed a patient in whom this condition had been treated by operation with much success. Pachymeningitis hypertrophica occurred in one case amongst those collected by Dufour. The thickening of the membrane invaded the dura mater over the lumbar enlargement as well as over the cauda equina.

Lastly three recent cases of unilateral lesion of the cauda equina recorded by Raymond[15] may be abstracted.

CASE 1.—A patient, aged 46 years, whose occupation, that of a washerwoman, required her to stand for long periods of time and to be constantly working in cold water, began to suffer from pain in the lumbar region on the left side, which ameliorated somewhat during the next year. One morning on waking she found her left leg paralysed and flaccid. For several days there were also constipation and retention of urine. The bladder symptoms improved a little but four months later, on admission to hospital, she was found to have a bedsore on the left side of the sacrum with the paralysis and a distribution of anæsthesia met with in lesions of the sacral roots. The symptoms were throughout unilateral. Raymond considers the case to be one of a chronic meningitis. He rejects the diagnosis of tumour on account of the history, intermittent progress of symptoms, and the rather sudden onset of paralysis.

CASE 2.—A woman, aged 28 years, by occupation a machinist, was rather suddenly taken with violent pains in the middle of the sacral region radiating along the thighs in the course of the sciatic nerves, more severe in the left than the right side. Later, difficulty in walking developed with the characteristic paralysis of motion and sensation, but much more marked in the left side. There was no pain on pressure over the course of the sciatic nerve or at the points of Valleix. The sign of Lasègue was absent. There was incontinence of urine which later disappeared, and the sensation of the bladder and rectum was not interfered with. A trophic sore developed over the sacrum. The ankle-jerks and anal reflex were absent. The duration was two years. Raymond makes the diagnosis of radicular neuritis, caused by the occupation of the patient, the history and transitory improvement being against a tumour.

CASE 3.—The patient, a man, aged 38 years, a coachman and a hard drinker, suffered from numbness and tingling in the lower limbs, and a week later, after continuous exposure to rain, noticed that he had suddenly lost power in the left foot. The weakness gradually invaded the leg and thigh; there was also considerable pain in those parts; later difficulty in micturition occurred, followed, however, by a return to the normal condition. In this condition, having been ill 15 days, he went to hospital. He was found to have the characteristic motor and sensory paralysis in the left side

[7] Referred to in Dufour's Thesis, p. 167.
[8] *Le Névraxe*, vol. iv., fasc. i., p. 93, 1902.
[9] Loc. cit.
[10] Loc. cit.
[11] Journal of Nervous and Mental Diseases, 1902, p. 108.
[12] Ibid., 1901, p. 157.
[13] Ibid., 1903, p. 101.
[14] Ibid., 1903, p. 665.
[15] Loc. cit.

with the reaction of degeneration in the muscles of the leg. The knee-jerk was present; the ankle-jerk was absent. There was no pain on pressure over the course of the sciatic nerve and the sign of Lasègue was absent. There was no anal reflex and he could not dislodge the last drops of urine from the urethra without much straining. Although he had no incontinence of urine or fæces yet the mucous membranes were insensitive. Raymond again considers this case to be one of radicular neuritis. The sudden onset indicates that it is in part a vascular lesion, an apoplectiform neuritis, but not comparable to those cases in which a hæmorrhage takes place into the sheath of the nerves; in such instances the symptoms attain their maximum extent at once and then gradually diminish or at least remain stationary. Raymond rather considers it is a form of compression, a pachymeningitis hæmorrhagica. The diagnosis of tumour was rejected on account of (1) the unilateral nature of the symptoms; (2) the rapid onset; and (3) the temporary amelioration.

PS.—The patient in my case died early last May. At the necropsy the original growth was found to be of very large size and multiple growths were present in the pia mater along the whole length of the spinal cord. A similar growth was also present in the angle formed by the cerebellum, pons, and medulla.

Liverpool.

129 CONSECUTIVE AND SUCCESSFUL OPERATIONS FOR APPENDICITIS DURING THE QUIESCENT PERIOD IN 12 YEARS (TREVES'S OPERATION).[1]

BY J. LYNN THOMAS, C.B., F.R.C.S. ENG.,

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MY first operation was performed on April 17th, 1893, on a patient of Dr. J. D. Williams. It was done in so small a room that the anæsthetist had to take his position on the bed which occupied most of the available space. The appendix was retrocæcal in position and about two inches of the right ureter and the common iliac blood-vessels were exposed before it was successfully removed. It was an ordeal for a beginner. My first seven patients belonged to seven different nationalities, an extraordinary illustration of the universality of the disease.

Up to the year 1898 operations were performed under the wet antiseptic system; since then they have been performed under dry aseptic methods, the operator and the assistants wearing thread gloves regularly. Sponges were discarded with the antiseptic method and gauze was substituted. The change from the antiseptic to the aseptic method has left two lasting impressions upon my mind: the first is that shock or reaction after operation is very much less under aseptic methods, due in some degree to the fact that the patient's system is not poisoned by the absorption of carbolic acid or perchloride of mercury; and the second is the disappearance of suppuration and stitch abscess. When these complications occur the surgeon or his assistants are usually at fault, but occasionally one finds a patient who has coarse and rough skin, or is liable to eczema or other forms of dermatitis from trivial causes; but even in such patients suppuration can be prevented by taking the sutures out within 24 hours and by paying special care to the skin. When pus appears in a clean wound the surgeon's technique is at fault. The abdominal wound was closed by *en masse* sutures during the antiseptic system and in tiers since it was discarded. The number of layers of buried sutures varies with the thickness of the abdominal wall. When the stratum of subcutaneous fat exceeds half an inch its surfaces are approximated by buried sutures in order to leave as little tension as possible upon the skin sutures. During the antiseptic period layers of iodoform or cyanide gauze were placed next the skin and then the whole of the abdomen was covered with Gamgee tissue and kept in place by a broad bandage and a spica round the right thigh. At present no bandages or other dressings are used as the wound is simply sealed with gauze and collodion dressing. Formerly patients were kept in bed for from two to four weeks; now they are allowed to get up in from 8 to 13 days after operation. Nevertheless it is necessary to caution patients against doing stupid things when they get away from the surgeon's control. One of my patients took a hot bath and went for a long drive on a cold day on the twelfth day after appendicectomy; he was punished by a severe attack of pneumonia.

I advise removal of the appendix in cases (*a*) of operation for ventral hernia following the opening of a perityphlitic abscess; (*b*) in cases of persistent thickening or induration after a first attack of appendicitis (see Fig. 1). Occasionally I have removed the appendix after the first attack has run a normal course, owing to the patient's dread of having another attack when travelling in places where experienced surgeons would not be available. Lastly, I advise removal of the appendix after two definite inflammatory attacks. It is incumbent on all good surgeons to emphasise the condition *inflammatory*, as quite a host of healthy appendices have been removed for so-called appendicular colic. There can be no doubt but that there are definite attacks of appendicular colic due to circumstances similar to those which give rise to renal and biliary colic; nevertheless I think one should be extremely careful in estimating the value of this particular symptom in forming an opinion as to the advisability of having an operation performed. There is another sign—tenderness over McBurney's point—which often misleads like a will-o'-the-wisp, if the surgeon looks upon it as a valuable symptom. It is present in many other conditions than that of appendicitis. Quite recently I saw two patients who had had appendicectomy performed for the combined symptoms of "apyrexial appendicular colic with well-marked tenderness over McBurney's point" without the slightest benefit to the unfortunate victims. Those who have strong faith in the value of these symptoms would do well to ponder over Dr. Johnson's notion about the wind egg. If the clinician takes the trouble to test for tenderness over McBurney's point in cases where there is no suggestion of appendicitis he will perhaps be surprised to find it "well marked" in a certain number of apparently healthy

FIG. 1.

Appendix removed for a first attack. The concretion marked 1, removed from X, must have existed many months before the symptoms of peritonitis set in.

[1] A paper read before the Medical Society, Newport (Mon.), on April 18th, 1905.

individuals; also in cases of right renal colic, early caries of the spine, Glénard's disease, colitis, and dilated stomach, &c.

In connexion with the difficulties of forming a correct diagnosis I would like to refer to a remarkable case that I saw in 1899 with Dr. C. C. Shepherd. A man, aged about 30 years, had had between 60 and 70 definite attacks of appendicular colic, accompanied by vomiting and well-marked tenderness over McBurney's point lasting from a few hours to two or three days. There was no hæmaturia or albuminuria. We deferred interfering with the appendix until we observed a complete attack. The next one was of exceptional severity and came on whilst the patient was walking. He was found insensible and collapsed and his life was despaired of for a time but he gradually recovered with his "usual symptoms of appendicitis," but a swelling was noticed behind the cæcum which extended to the right loin, suggesting nephritic or perinephritic trouble. I operated and removed a large clot of blood from around a small cystic kidney with a short impermeable ureter which terminated in a cord. The condition of the kidney was evidently congenital and the probable explanation of the repeated attacks of simulated appendicitis was due to small recurrent hæmorrhage round the cystic kidney, but until the last attack they were not of sufficient volume to give rise to a detectable swelling. The patient has enjoyed excellent health since the operation (1904).

I may further illustrate the difficulties and pitfalls which diagnosticians have to face in cases of simulation of appendicitis by recording the following examples:—

CASE 1. *Salpingitis simulating enteric fever.*—A woman, who was on a visit to Cardiff, was treated as a case of typhoid fever and was sent to the sanatorium, where for a time the disease seemed to run the course of ordinary enteric fever until a swelling appeared in the right iliac fossa. Dr. D. R. Paterson saw her in consultation with Dr. E Walford. The symptoms now pointed to the development of a perityphlitic abscess. I was asked to see her and concurred with the diagnosis. At the operation it turned out to be a case of right salpingitis due to acute infection by the gonococcus. Some months afterwards when applying to the London Truss Society the patient reported herself as a case of operation for perforation during an attack of enteric fever!

CASE 2. *Persistent biliary colic simulated by concretions in misplaced appendix.*—A man, aged 50 years, was taken into the Cardiff Infirmary for treatment as a case of biliary colic.

FIG. 2.

Appendix which gave rise to colic simulating passage of gall-stones owing to undescended cæcum.

Recurring and sudden nauseating pains over the site of the gall-bladder made the patient unsuited for work. I agreed with the diagnosis and treated him accordingly. I opened the abdomen over the gall-bladder by Kocher's oblique incision and removed a nine-inch convoluted appendix with concretions in it (Fig. 2). The cæcum had not descended to its usual position but remained in contact with the gall-bladder. The gall-bladder was distended. I opened it in order to make certain of its contents. It was healthy and contained LO calculi and the patient has had no further trouble from colic.

When the cæcum in its developmental evolution does not descend to its normal anatomical position appendicitis in these circumstances simulates diseases of viscera in that particular region. In one case I operated for perforation of a supposed duodenal ulcer but was surprised to find that it was a case of gangrenous appendicitis with perforation near its attachment to the cæcum which lay in contact with the under surface of the liver.

In women it is frequently difficult to make a correct diagnosis between inflammation of the right ovary and right Fallopian tube and that of the vermiform appendix. Sometimes they are all simultaneously involved in the process. In perforative appendicitis the symptoms are in the early stages not uncommonly identical with rupture of a right tubal pregnancy, but fortunately in these conditions proper treatment does not depend upon correct pre-operative differential diagnosis but upon the adoption of means to meet the conditions found after the abdomen is opened in cases where perforation is diagnosed.

When a case presents a definite swelling near or in the pelvis and there is a doubt as to its being due to blood, serum, or pus, an examination of the blood for leucocytosis is of considerable importance, but in deciding upon the urgency of operating it is necessary to bear in mind that big collections of pus in an appendix or a Fallopian tube are capable of being removed by non-operative natural processes. *Ubi pus ibi incisio* is an excellent law for observation in practice but it is not to be taken as that of the Medes and Persians "which altereth not." I saw a female patient with Mr. J. P. T. Burke at Llanbradach during the third week of an attack of suppurative appendicitis. She stated that she had had a similar attack some years ago and that she got well by the "discharge of much matter" through the vagina. She had a globular swelling occupying the right half of the pelvis and extending upwards as high as the right anterior superior iliac spine. Her temperature was 103° F. and her pulse was 102. She had had rigors and sweatings; per vaginam the swelling was fluctuating. An operation was advised and on the next day she was driven to Cardiff Infirmary, but owing to a sudden fall in her pulse-rate and temperature I kept her under observation for nearly a month and the swelling gradually got smaller until it reached to less than a quarter of its size on admission. At the operation I removed the appendix and the whole track of the abscess cavity; the appendix had ulcerated through its coats near its base into the meso-appendix and formed an abscess cavity which became attached to, and perforated, the anterior abdominal wall; its contents had become dried up into firm putty-like material.

In my list of cases I only operated once during pregnancy for relapsing appendicitis during the sixth to seventh month at the infirmary. The appendix was carried upwards by the uterus and the operation was easy and done quickly and the patient had a normal recovery and went to term.

Amongst the unusual complications of relapsing appendicitis was one of glycosuria. A female patient of Dr. R. H. S. Torney, Cowbridge, was kept under observation for about a month before I operated. The glycosuria was intermittent and large quantities of sugar were sometimes passed. After I removed a tensely distended appendix there was no recurrence of glycosuria. The appendix was filled with bluish-white pus having a foul, nauseating smell. Unfortunately it was put at once into formalin. The pus in all probability contained poison with properties similar to those possessed by phloridzin, which under the varying tension that it was subjected to in the appendix periodically became absorbed and gave rise to glycosuria.

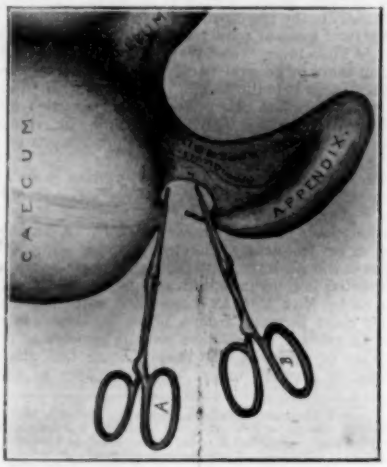
Mr. Llewellyn C. P. Phillips of Cairo, in an interesting paper upon Some of the Surgical Aspects of Glycosuria and Diabetes,[1] has collected four cases of appendicitis associated with glycosuria. The treatment in three of his cases was expectant and in the fourth an abscess was opened. In my case removal of the appendix with its offensive contents cured the glycosuria promptly.

[1] THE LANCET, May 10th, 1902, p. 1309, Table I.

In three cases I did not remove the whole of the appendix owing to the risk involved; in two the tip of the appendix was incorporated with the rectum wall and I left the end implanted in the rectum; in one convalescence was protracted but eventually the patient became free from pelvic pain and has remained so for more than two years. In three cases I did not attempt to remove the appendix as it was surrounded by coils of small intestine so densely bound together that successful removal would have involved resection of intestine and a perilous dissection of the mass in order to liberate it from the sacrum and brim of the pelvis. In one of these patients an abscess subsequently formed which discharged into the rectum and was cured; the other two patients enjoy good health but for an occasional "bout of indigestion." I think it is better to let nature deal with such conditions than to perform dangerous and hazardous operations for which patients are not prepared. Patients prefer to put up with life in discomfort than to die victims to ultra-radical operations.

There is no royal road either as to the method of opening the abdomen or of removing the appendix, but in a large number of cases one can amputate the appendix through a two-inch skin incision and forcible entry by blunt dissection through the muscular planes but it often becomes necessary to enlarge the opening considerably in order to deal with unforeseen complications. Sometimes the complete operation can be performed with ease in ten minutes, but usually it takes more than double that time and the last one I did (April 13th, 1905) took one and a half hours. The Trendelenburg position is of great value in cases where the appendix is situated in the pelvis; in these cases it is usually easier to remove the appendix by starting from above by severing it from the cæcum and then continue the dissection downwards towards the tip. I adopt the same course in cases where there is no meso-appendix and where the end of the appendix is tied down. This method is also preferable in cases where the base of the appendix is healthy and its end has a pear-shaped enlargement (see Fig. 3). In all other conditions of

FIG. 3.



To show that when the appendix is in the pelvis, or has no meso-appendix, the first step is to crush its attachment to the cæcum and to apply two pairs of forceps to the crushed part which is then cauterised or cut flush along forceps A.

the appendix it is easier to start at the free end and work towards its attachment to the cæcum. On occasions where the diseased appendix resembles an icicle in relation to its attachment to the cæcum it is occasionally necessary to remove a small piece of the cæcal wall in order to get a suitable stump. It has not been my fortune in most of the cases to be able to perform an ideally simple method of dealing with the stump of the appendix—i.e., crush it at its cæcal attachment and apply two pairs of narrow-bladed forceps to the crushed part and either burn off or cut off along the forceps attached to the cæcum, then tie and invaginate by either a purse-string or interrupted suture. I find a serrated crushing forceps far superior to a smooth one owing to its obliterating effect upon the blood-vessels.

No matter what method is used in treating the stump it is not only desirable but always necessary to bring the peritoneum over raw surfaces whenever possible, as post-operative complications in after years can only be avoided by careful attention to these details. A patient who was operated upon by a well-known surgeon in 1890 and to whom I administered the anæsthetic died last year from acute strangulation due to a coil of intestine being incarcerated under a band extending from the end of the cæcum to the abdominal wall. The base of the appendix was simply tied and cut off after the early fashion of dealing with an ovarian pedicle. When the stump cannot be covered with the peritoneum the end of the cæcum can usually be fixed to the abdominal wall by points of sutures or omental flaps applied to it.

In cases of retrocæcal position of the appendix great care should always be taken to close accurately by suture the incision made through the peritoneum for its exposure, as a complication occurred within 12 months of appendicectomy in one of my cases which I am not aware of having been previously recorded. In February, 1900, I removed a retrocæcal appendix containing pus and I allowed the cæcum to fall back into its natural position after the operation. In time the patient began to lose flesh and complained of dragging pain in the region of his stomach. He consulted Sir Lauder Brunton and was advised to undergo operation in order to deal with some mechanical obstruction to the passage of food from the stomach. I operated and found that the great omentum had got fixed into the retrocæcal space made for the removal of the appendix. I divided the great omentum, which dragged upon the transverse colon and stomach, and the patient was kept lying on his left side for some days after operation in order that the divided surfaces of the omentum should be kept well apart during the process of repair. Since that experience I carefully close all incisions made in the peritoneum and if drainage of the retrocæcal space is thought advisable it can be done extra-peritoneally by extending the parietal incision upwards and backwards parallel with the crest of the ilium and an inch above it.

Cardiff.

FAMILY TABES DORSALIS: TABES IN HUSBAND, WIFE, AND DAUGHTER.[1]

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IN 1893 I recorded an instance of conjugal tabes dorsalis[2] of which the main details were as follows. The man, aged 58 years, married at 22 years of age and showed early symptoms of tabes at the age of 33 years. In 1898 the pupils did not react to light and the knee-jerks were absent. There was marked incoördination in the legs in consequence of which he was bedridden. There were characteristic pains and bladder symptoms. He had had a passing hemiplegia a year previously. The woman, aged 55 years, married at 19 years of age and developed the early symptoms of tabes at the age of 29 years. In 1898 the pupils were very small and did not react to light. She suffered from pains, attacks of vomiting, and bladder symptoms. The left tibia had fractured spontaneously and both knees were swollen from tabetic arthropathy. The question of past syphilis could not be thoroughly investigated in this tabetic couple, but the family history (to be given later) and the occurrence of the tabes itself made syphilis practically certain.

Since the date mentioned above the man has died, aged 58 years. The wife remains in much the same state, the disease being almost, if not quite, stationary. She has occasional pains and bladder symptoms, but she is able to earn money by sewing. The eldest daughter now presents well-marked symptoms of tabes. In 1898 I strongly suspected that she was commencing with the disease owing to

[1] A paper read before the Neurological Society on May 18th, 1905.
[2] Trevelyan: Brit. Med. Jour., vol. ii., 1893.

the presence of pains. Since then I have watched the pupil reflex gradually (but with variations) diminish and disappear, and also the knee-jerks become less and eventually go altogether, the left disappearing first. The following are the clinical details of this case.

The patient, aged 43 years, commenced to have pains and occasional double vision when she was 36 years of age. She also complained of some difficulty in getting up and down stairs. A feeling of constriction round the body was noticed a little later and occasionally she had slight bladder disturbance. Present condition (May, 1905). The patient is distinctly neurotic but otherwise there are no mental symptoms. The pupils are small (one and a half millimetres) and equal but they do not react to light. A perceptible reaction occurs to accommodation. There is no affection of the eye muscles, no optic atrophy, and no choroiditis. There is some incoordination in the legs, especially in the left, and she sways a little when standing with the eyes closed and the feet together, but this incoordination is very slight. There is a zone of hyperæsthesia round the trunk on a level with the eighth and ninth dorsal vertebræ. There is no knee or tendo Achillis jerk. The plantar reflex is flexor in type. There is no bladder disturbance at the present time.

The family history of this tabetic couple is of considerable interest. There have been 12 pregnancies and of nine children born alive only one was a boy. Only three of these children are still living. The following is an account of the results of the 12 pregnancies: 1. A girl, now aged 43 years (tabetic); married (for family see later). 2. A boy, died, aged 15 years, from rheumatic fever and cardiac disease. 3. A girl, now aged 38 years, quite well; married: ten children (nine living, three miscarriages). 4. A girl, died, aged 14 months. 5. A girl, died, aged 23 years, from puerperal fever. She also had rheumatism and heart disease. (The first symptoms of tabes appeared in the wife about this time). 6. A girl, died, aged four and a half years, from inflammation of the brain. 7. A girl, died, aged 15 months. 8. A miscarriage. 9. A miscarriage (probably a macerated fœtus). 10. Born dead at term. 11. A girl, now aged 26 years, unmarried. She has had rheumatism and heart disease. 12. A girl, died, aged 14 months. The last half of that family was strikingly and curiously worse than the first half.

The usual history of the syphilitic family such as that related by Pourreyon[3] in a tabetic couple may be given for contrast. There were five pregnancies: (1) a miscarriage at four and a half months; (2) a miscarriage at six months; (3) a miscarriage at seven months; (4) born at term, died aged four months (tabetic pains appeared in the wife); and (5) living and well.

As has been mentioned, no satisfactory evidence of past syphilis is forthcoming in my tabetic pair except such as is derived from the family history. Before his marriage the man had been a sailor and perhaps for this reason syphilis is not very improbable. It was known that the husband and wife were a hard-working, steady, and industrious couple. The history of the daughter's family is also important. There have been six pregnancies. 1. A boy, died, aged five years, from inflammation of the brain, probably tuberculous. 2. A girl, aged 14 years, alive and well. 3. A miscarriage. 4. A girl, aged 11 years, alive and well. 5. A girl, aged eight years. This child is said to have had snuffles when six months old but there were no other symptoms. This and the next child have been examined and no evidence of congenital syphilis can be made out in them. 6. A girl, aged four years, alive and well. The daughter's husband is a healthy man who denies having had venereal disease and no signs of past syphilis can be found on him. The daughter herself also presents no history or evidence of acquired syphilis. She also shows no signs of congenital syphilis but the upper teeth have decayed away. I conclude that this tabetic couple almost certainly had syphilis and that there is no evidence to show the existence of acquired syphilis in the tabetic daughter and her husband.

I propose to make a few remarks on conjugal tabes, on tabes in both parents and offspring, on tabes in one parent and offspring, and also upon the relationship between congenital syphilis and tabes. While admitting the very strong evidence of the identity of the morbid entity in tabes and general paralysis, I shall only refer incidentally to the latter affection. Little need be said about conjugal tabes, for much has been written about it during the past few years, and series of cases have been collected and added to by various writers. The percentage of syphilis in them is given by Hudovernig[4] as 96 and by Raecke[5] as 90. It may be of interest to refer to an instance of conjugal tabes in pure negroes which was reported by Francine,[6] because syphilis is common and tabes apparently very rare among negroes. Usually the disease begins in the husband first and the wife develops symptoms in the course of from two to five years, or even ten years, and in one case 20 years afterwards. In my couple the disease began first in the wife and the interval before the appearance of the symptoms in the husband was one and a half years. It is also noteworthy that if general paralysis takes the place of tabes in the affected couple it usually attacks the husband, the wife being tabetic.

Tabes in both husband, wife, and offspring.—This combination seems to be very exceptional. I have only been able to find one or two instances of it. Max Nonne[7] records a remarkable instance in which all three were infected extragenitally. The child was infected with syphilis by a boy bedfellow and he in turn infected his parents. All three became tabetic, the boy devoloping tabes five years after the time when he was infected. The same author[8] also refers very briefly to an instance in which both the syphilitic father and the mother became tabetic and the boy was feeble-minded and tabetic. It may, of course, with Gompertz[9] be objected in such cases that the affection in the boy was more in the nature of a genuine syphilitic lesion rather than tabes. Dr. Dawson F. D. Turner[10] recorded a group of cases in which both husband and wife had tabes and their child presented several symptoms belonging, not to tabes, but to Friedreich's ataxia. This child also had aortic disease.

There are instances in which general paralysis has taken the place of tabes in one or more of the individuals of the group under consideration. Thus in a remarkable instance related by Souques[11] the husband was syphilitic and a general paralytic and the wife and two daughters tabetic. In Kutner's[12] group the father was syphilitic and a general paralytic, the wife tabetic, and the daughter, 13 years of age, also tabetic for the past three years. Or, again, the cases of Moenkmoeller,[13] in which the father had tabes and the mother and daughter general paralysis.

To illustrate the importance of the relationship of syphilis to tabes (and general paralysis) the groups of cases recorded by Erb,[14] Finkelburg,[15] and Wertheimer[16] may be referred to in which tabes or general paralysis was present in two of the individuals and syphilis of the nervous system in the third. Finally, to complete the series, in the instance related by Arning[17] (quoted by Erb[18]) all three individuals—viz., husband, wife, and offspring—developed signs of cerebral syphilis.

Tabes in one parent and offspring.—These cases are fairly numerous. Remak,[19] Berbez,[20] Erb,[21] Goldflam,[22] Kahlischer,[23] Dydynski,[24] Brasch,[25] Babinski,[26] Max Nonne,[27] and others have recorded instances of it. A daughter seems to be more frequently affected than a son. Congenital syphilis is the all-important factor in these cases as far as the offspring is concerned, but acquired syphilis may be the cause, as in Max Nonne's[28] case, and also in Kron's[29] case where a child infected from a nurse developed tabes at the age of 13 years. The disease usually appears at the age of five years or upwards, the cases falling into the group of infantile or juvenile tabes. The daughter of my tabetic

[3] Pourreyon: Thèse de Paris, 1903.

[4] Hudovernig: Neurologisches Centralblatt, 1903.
[5] Raecke, quoted by Erb: Berliner Klinische Wochenschrift, 1904.
[6] Francine: American Journal of the Medical Sciences, 1900.
[7] Nonne: Fortschritt der Medicin, 1904.
[8] Nonne: Berliner Klinische Wochenschrift, 1904.
[9] Gompertz: Neurologisches Centralblatt, 1900.
[10] Turner: THE LANCET, Nov. 1st, 1890, p. 930.
[11] Souques: Bulletin de la Société Médicale des Hôpitaux, 1902.
[12] Kutner: Allgemeine Zeitschrift für Psychiatrie, 1900.
[13] Moenkmoeller, quoted by Mott: Archives of Neurology, vol. ii.
[14] Erb: Berliner Klinische Wochenschrift, 1904.
[15] Finkelburg: Deutsche Zeitschrift für Nervenheilkunde, Bände v und vi.
[16] Wertheimer: Neurologisches Centralblatt, 1904 (abstract).
[17] Arning, quoted by Erb: Berliner Klinische Wochenschrift, 1901.
[18] Erb: Loc. cit.
[19] Remak: Berliner Klinische Wochenschrift, 1885.
[20] Berbez: Progrès Médical, 1887.
[21] Erb: Deutsche Medicinische Wochenschrift, 1891.
[22] Goldflam: Deutsche Zeitschrift für Nervenheilkunde, 1892.
[23] Kahlischer: Berliner Klinische Wochenschrift, 1898.
[24] Dydynski: Neurologisches Centralblatt, 1900.
[25] Brasch: Berliner Klinische Wochenschrift, 1901.
[26] Babinski: Bulletin de la Société des Hôpitaux, 1902.
[27] Nonne: Berliner Klinische Wochenschrift, 1904.
[28] Ibid.
[29] Kron: Neurologisches Centralblatt, 1901.

couple developed tabes in her thirty-seventh year—a late date for tabes to develop on a congenital syphilitic basis. It is also true that we found no marks of congenital syphilis upon her and there is only the evidence provided by her family in favour of congenital syphilis.

It is not, however, absolutely necessary for the purpose in question that the patient should bear the usual stigmata of congenital syphilis—indeed, some go so far as to look upon the tabes itself as a stigma of late hereditary syphilis—and on the other hand, I think we have fairly excluded acquired syphilis. It is interesting to note that in the case of a tabetic woman, aged 22 years, bearing the stigmata of congenital syphilis, Barthelemy [30] deliberately assigns the tabes to congenital syphilis although the patient had been abundantly exposed to the infection of acquired syphilis but had not had any of its usual manifestations. Quite apart from the subject of tabetic couples and their offspring, a fair number of cases are on record in which adult tabes has been attributed to congenital syphilis. Usually the disease has commenced before 20 years of age but in some cases considerably later. Thus Max Nonne [31] quotes a case of tabes in a man aged 32 years, who had suffered from severe lightning pains for two years and who had never been infected with syphilis or addicted to drink. The patient had previously been treated for congenital syphilis and Nonne looks upon the latter as the cause of the tabes in this case. Sabrazes [32] has also reported a most interesting case in a man, aged 42 years, in whom the tabes appeared two years previously. In the absence of a history of acquired syphilis and in the presence of marked stigmata of congenital syphilis the author assigns the latter as the cause of the tabes. Pourreyon [33] in his interesting thesis concludes that when tabes or general paralysis is of congenital syphilitic origin it begins at an age between five and 40 years and he adds that these cases are interesting for the study of precocious or late congenital syphilis. Dydynski [34] even goes so far as to say that if observers do not lose sight of congenital syphilis fewer cases of tabes will be recorded where syphilis has been excluded.

The question, it seems to me, may be put in this form in my cases. Did the tabetic couple merely hand down to their daughter a general vulnerability of nervous tissue to certain noxæ (whether in the form of the syphilitic virus or of stress, strain, &c.), or did they transmit to her the actual virus which would bring about with little or no further provocation the eventual degeneration of the afferent sensory neuron?—and I should answer it in the latter sense. Kahlischer [35] has related an instance of tabes in mother and son, the tabes appearing at the age of 26 years in the latter He excludes to his satisfaction both congenital and acquired syphilis and he attributes the tabes almost solely to congenital hereditary influences. This question of neuropathic heredity in tabes (and general paralysis), at one time much emphasised by the French school, is no longer looked upon as of any very great importance. Yet there have been series of cases recorded where the neuropathic heredity has been marked. Thus Berbez [36] as long ago as 1887 mentioned that among 150 cases of tabes there was a neuropathic heredity in 63 and tabes or general paralysis in a parent in 15 of these cases. Dydynski [37] in 1890, in speaking of infantile tabes (and at that time he would only allow seven such cases), found besides congenital syphilis a neuropathic heredity in six. Probably this neuropathic heredity can only mean a greater vulnerability of the nervous system to the causes of tabes such as the syphilitic virus. It is well seen in cases where, for instance, brothers infected with syphilis from different sources (Erb, Max Nonne, and others) have developed tabes. Among my cases I have records of two brothers, one of whom was suffering from tabes when the other developed an acute general paralysis with fits and died within the year. Apart from this vulnerability of the nervous system, it should, no doubt, be remembered that the syphilitic virus may sometimes be of great potency so far as the nervous system is concerned. This is well exemplified when two or more individuals contract syphilis from the same source as in the cases of Erb,[38] Max Nonne,[39] and Marie et Bernard,[40] and all, or nearly all, ultimately develop tabes (or general paralysis), or again in the truly appalling instance related by Brosius [41] where out of seven glass-blowers infected with syphilis from the same source one developed tabes, another tabo-paralysis, and two others general paralysis. As far as the neuropathic heredity is concerned it would appear to be correct to look upon it with Fehre [42] as nothing more than a predisposing cause and probably not as a very important one.

I have to thank Dr. P. G. Steele, the resident medical officer at the Leeds General Infirmary, and Dr. B. Suggit of the Leeds Public Dispensary for assistance in getting together notes and histories of my cases.

Leeds.

[30] Barthelemy: Annales de Dermatologie et de Syphiligraphie, 1887.
[31] Nonne: Syphilis und Nervensystem, 1902.
[32] Sabrazes: Nouvelle Iconographie de la Salpêtrière, 1903.
[33] Pourreyon: Loc. cit.
[34] Dydynski: Loc. cit.
[35] Kahlischer: Loc. cit.
[36] Berbez: Loc. cit.
[37] Dydynski: Loc. cit

[38] Erb: Berliner Klinische Wochenschrift, 1904.
[39] Nonne: Ibid.
[40] Marie et Bernard: Deutsche Zeitschrift für Nervenheilkunde, 1897.
[41] Brosius: Archiv für Psychiatrie, Band xxxvii., 1903.
[42] Fehre: Berliner Klinsche Wochenschrift, 1901.

A SIMPLE TECHNIQUE FOR THE BACTERIOSCOPIC EXAMINATION OF SEWAGE.

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FROM the point of view of the laboratory worker in the East the methods at present in vogue for the quantitative estimation of the "organisms of indication" in sewage leave much to be desired. These methods all presuppose the ice packing of samples when necessary and the existence of a laboratory well stocked with the particular apparatus required—preliminary conditions which do not often obtain in India. Thus it has come to pass that although biological methods for the treatment of sewage have been making steady headway in India for some years past, official and public records are silent on the bacteriological side of the question. It will, I think, be readily admitted that, in the interests of the public health, every biological method for the disposal of sewage should be made the subject of systematic bacterioscopic examination. It is unlikely, however, that this will ever be the case whilst our present methods of investigation remain unaltered. A brief survey of some of the methods at present employed in the bacterioscopic examination of sewage will serve to make the point clear. The criteria usually adopted in the examination of sewage are four in number: (1) the total number of organisms per cubic centimetre; (2) the number of bacillus coli per cubic centimetre; (3) the number of streptococci per cubic centimetre; and (4) the number of spores of bacillus enteritidis sporogenes per cubic centimetre. For the purpose of demonstrating the cumbersomeness of the methods of estimation usually employed it will be sufficient if we indicate only those available for the quantitative estimation of bacillus coli and the spores of bacillus enteritidis sporogenes.

The methods of estimating bacillus coli.—1. By the microscopic examination of colonies developing from surface cultivations on phenolated gelatine or agar plates. These cultivations are made either directly from the material to be examined or from preliminary phenol broth cultures. This method is extremely laborious and even in the most practised hands leaves much to be desired in the way of accuracy. 2. By the neutral-red broth method. 3. By MacConkey's method. 4. By Pakes's method. 5. By Houston's method.

Method of estimating the spores of bacillus enteritidis sporogenes.—The only practicable method is by the use of milk cultures heated to 80° C. for 15 minutes and incubated anaerobically at 37° C.

Whichever method of enumerating bacillus coli the routine worker may adopt he has to face the difficulties of ice packing and apparatus. For example, let us suppose that a sewage-disposal system consisting of an open septic tank and a couple of continuous filters is the subject of

examination. In this case four samples should be taken, viz.: (1) the raw sewage; (2) the septic tank effluent; (3) the effluent of filter No. 1; and (4) the effluent of filter No. 2.

Let us also suppose that the investigator adopts MacConkey's method of estimating bacillus coli. This will necessitate the use of two of the larger-sized Bulloch's apparatus with incubator space to correspond. Further, as these cultures will be incubated at 42° C. the incubators used will not be available for any other purposes. Incubator space will also have to be found for some 16 or more Buchner's tubes for the estimation of the spores of the bacillus enteritidis sporogenes. The use of other methods of estimating the bacillus coli which do not require anaerobic culture at a special temperature would reduce the requirements somewhat. If, however, we add to the apparatus total that required for the estimation of the total number of organisms and of streptococcus it is hardly surprising that with so many requirements the examination of sewage as a regular routine practice by the controlling authority is considered impracticable. Some simple technique is urgently required which will obviate the use of costly and cumbersome apparatus and which can be rapidly carried out, thus bringing the routine examination of sewage within the scope of the ordinary worker. I do not think that any advantage has resulted from the multiplication of the number of "organisms of indication" requiring quantitative estimation. We have now three such organisms and it is not likely that the number will remain constant. Without enlarging on the subject I may say that in my opinion it will be sufficient for routine purposes if we disregard the streptococcus altogether and take as our criteria: (1) the total number of organisms per cubic centimetre; (2) the number of bacillus coli per cubic centimetre; and (3) the number of spores of bacillus enteritidis sporogenes per cubic centimetre.

In a previous communication[1] I described a simple technique for the enumeration of the total number of organisms in any fluid. In the present communication I propose to describe a technique for the quantitative estimation of bacillus coli and the spores of bacillus enteritidis sporogenes in sewage which I believe will meet the requirements of most workers with slender resources at their disposal and which in point of accuracy will bear comparison with the most complicated methods at the disposal of workers in the best equipped of laboratories. The method, besides materially reducing the quantity of apparatus required, entirely disposes of the ice-packing difficulty. As any modification of technique in the direction of simplicity is likely to appeal to a wide circle I have deemed it advisable to bring the technique in question to the notice of the general body of laboratory workers.

Technique for the quantitative estimation of bacillus coli.—As the technique I am about to describe for the enumeration of bacillus coli is identical with that previously described for the enumeration of organisms—the culture medium alone excepted—I shall merely state the steps of the operation, referring the reader to the previous paper for full details. The following is the apparatus required: three sterile diluting pipettes, three sterile watch glasses, eight nutrose-agar slopes (Drigalski-Conradi medium), and a vessel containing sterile water.

In the three watch glasses dilutions of 1 in 100, 1 in 10,000 and 1 in 1,000,000 respectively are made from the sewage to be examined with sterile water by means of the diluting pipettes. The eight agar tubes are then seeded as follows:—

ube					
1	receives 100 c.mm.	undiluted sewage	=0·1 c.c.	undiluted sewage.	
2	,, 10 c.mm.	,, ,,	=0·01 c.c.	,, ,,	
3	,, 100 c.mm.	1 in 100 dilution	=0·001 c.c.	,, ,,	
4	,, 10 c.mm.	,, ,,	=0·0001 c.c.	,, ,,	
5	,, 100 c.mm.	1 in 10,000 ,,	=0·00001 c.c.	,, ,,	
6	,, 10 c.mm.	,, ,,	=0·000001 c.c.	,, ,,	
7	,, 100 c.mm.	1 in 1,000,000 ,,	=0·0000001 c.c.	,, ,,	
8	,, 10 c mm.	,, ,,	=0·00000001 c.c.	,, ,,	

The tubes are then incubated at 37° C. for 24 hours or longer and the last tube showing a reddish colony in conjunction with the next tube which shows no reddish colony will indicate the limits between which the number of bacillus coli present in the sample must lie. Subcultures can then be made and the organism identified by the customary tests. It is important that the agar slopes should be quite dry before use. In practice this end can be conveniently attained by leaving the plugs out of the tubes when the agar is being allowed to set. The plugs should not be replaced until the surface of the agar is dry and glossy. This process can be safely carried out without fear of contaminating the medium. Owing to the remarkable properties of the Drigalski-Conradi medium the isolation of the bacillus coli by this method is an extremely simple matter. The appearance of the coli colonies is so characteristic that they can be detected almost at a glance and the further tests applied practically invariably confirm the first opinion formed. As very few sewage organisms can grow on this medium there is no obscuring of the bacillus coli colonies by other growths and the last tube showing the red colony is usually the last tube showing any growth at all. On account of the excessive humidity of the atmosphere in the Himalayan region at this time of the year I have been unable to test the accuracy of this method in estimating the total number of bacillus coli per cubic centimetre in terms of 10, 100, 1000, &c., but at other times of the year and in countries and places where monsoon conditions do not prevail I have little doubt that such a proceeding would be quite feasible. It would only be necessary to leave the plugs out of the tubes until the liquid sown on their surfaces had evaporated (the tubes being placed in the sloping position) and then to incubate in the ordinary way. In this way the last tube showing coliform growth would display discrete colonies from which the actual number of bacillus coli present in the sample could be calculated. I would emphasise this point, however, that if the number of bacillus coli in the sample be less than nine per cubic centimetre then it is impossible to estimate the number in this way. If the number present be between nine and ten per cubic centimetre then we would expect Tube 2 to show one red colony, all other tubes being free from red colonies. The following calculation will make this clear. Total amount of undiluted sewage sown on Tubes 1 and 2 = 0·11 cubic centimetre. Tube 1 shows no coliform colonies. Tube 2 shows one coliform colony. Therefore there are no bacilli coli in 0·10 cubic centimetre of the test fluid but at least one bacillus coli in 0·11 cubic centimetre. This is equivalent to 9·9 bacillus coli per cubic centimetre (1000 ÷ 0·11).

With a view to ascertaining the accuracy of this method I have tested it against MacConkey's method and have found the results to be identical. A single example of the comparison instituted between the two methods will suffice for illustration. A piece of fresh horse dung was shaken up in a sterile test tube with a little sterile water. The tube was then lightly centrifugalised and the supernatant fluid pipetted off. A quantitative estimation of the bacillus coli content of this fluid was then made simultaneously by MacConkey's method and by the method which I have just described with the following result:—

Nutrose Agar Aerobically at 37° C. for 24 Hours.		*MacConkey's Medium Anaerobically at 43° C. for 24 Hours.*	
Tube 1 = 0·1 c.c.	(growth)	Tube 1 = 0·1 c.c.	(growth)
,, 2 = 0·01 c.c.	,,	,, 2 = 0·01 c.c.	,,
,, 3 = 0·001 c.c.	,,	,, 3 = 0·001 c.c.	,,
,, 4 = 0·0001 c.c.	,,	,, 4 = 0·0001 c.c.	,,
,, 5 = 0·00001 c.c.	,,	,, 5 = 0·00001 c.c.	,,
,, 6 = 0·000001 c.c.	(sterile)	,, 6 = 0·000001 c.c.	(sterile)
,, 7 = 0·0000001 c.c.	,,	,, 7 = 0·0000001 c.c.	,,
,, 8 = 0·00000001 c.c.	,,	,, 8 = 0·00000001 c.c.	,,

The term growth in the case of the nutrose agar series means that the tube showed reddish colonies and in the case of the MacConkey series that the tube showed gas and acid production. By subculture bacillus coli was isolated from Tube 5 of both series. This method then can stand comparison with one of the most accurate methods at present in use.

Technique for the estimation of the spores of bacillus enteritidis sporogenes.—The great objection to the present method of enumerating the spores of bacillus enteritidis sporogenes in sewage is the quantity of apparatus required. Each sample requires four or five Buchner's tubes or their equivalent according to the method of anaerobic culture employed. This method of estimation, too, is obligatory as being the only practicable one available for routine purposes. My modification merely consists in the reduction of the quantity of apparatus required by the simple process of reducing the size of the test-tubes employed—a device which is rendered possible by the use of the special pipette previously described.[2] In this way the requisite proportion between culture medium and test fluid is maintained in

[1] THE LANCET, June 17th, 1905, p. 1641.

[2] Ibid.

tubes of miniature dimensions. The following is the apparatus required: two sterile diluting pipettes; two sterile watch glasses; six small test tubes; one tube of sterile milk; one Buchner's tube (large size); and a vessel containing sterile water.

These small test tubes are made from glass tubing, being blown and lipped in the ordinary way. The most convenient size of glass tubing is one giving the following measurements: external diameter 0·8 centimetre, internal diameter 0·5 centimetre. In blowing these tubes the bottoms should be made slightly bulbous for a reason which will afterwards be stated, but at the same time care must be taken that the bulb is not so large as to prevent the requisite number of tubes being got into the Buchner's tube. The average dimensions of the finished article are as follows: length 4·5 centimetres, extreme diameter of bulb one centimetre. These tubes are plugged with cotton wool, sterilised in the autoclave, and dried in an oven. In practice it will be convenient to have a large stock of them on hand and after sterilisation they are best stored in a basket. For convenience in manipulation a rack can easily be made by boring holes in the lid of a cardboard soap box with a cork borer of suitable diameter. The interior of the box is then packed with cotton wool until the internal depth is sufficiently small to allow of the tubes projecting far enough out of the holes for convenient handling. The lid is then firmly bound to the box with string.

The steps of the procedure are as follow. The sample to be tested is heated to 80° C. for 15 minutes, the necessary manipulations for the enumeration of the total number of organisms and of bacillus coli having been previously carried out. With the diluting pipette 0·5 cubic centimetre of sterile milk is introduced into each tube with the usual aseptic precautions. From the heated sample dilutions of 1 in 100 and 1 in 10,000 are made in the watch glasses with sterile water. The tubes are then seeded as follows:—

Tube.				
1	receives 100 c.mm. undiluted sewage	= 0·1 c.c.	undiluted sewage.	
2	,, 10 c.mm.	,, ,,	= 0·01 c.c.	,, ,,
3	,, 100 c.mm. 1 in 100	dilution	= 0·001 c.c.	,, ,,
4	,, 10 c.mm.	,, ,,	= 0·0001 c.c.	,, ,,
5	,, 100 c.mm. 1 in 10,000	,,	= 0·00001 c.c.	,, ,,
6	,, 10 c.mm.	,, ,,	= 0·000001 c.c.	,, ,,

The tubes are numbered from 1 to 6 consecutively with a pencil for writing on glass. The first four tubes are then tied into a bundle with an elastic band and a slip of paper inserted, giving a distinctive number to the sample. This little bunch of tubes is then slipped into the Buchner's tube (which has previously been prepared with the usual solutions) and allowed to slide down till arrested by the projecting glass stops. It is for this reason that the bottoms of the tubes are given a bulbous shape, as otherwise the bunch of tubes is apt to slip past the glass stops and fall into the pyrogallic acid with disastrous results. The remaining two tubes are then slipped into the Buchner's tube and allowed to slide down until arrested by the plugs of the bundle first inserted. The Buchner's tube is then corked and is ready for incubation. The operation of putting the milk tubes into the Buchner's tube only occupies a few seconds. If, as is usually the case, more than one sample is being tested at one time the procedure is slightly different. If the investigator is using six milk tubes for each sample—that is, 12 tubes in all, then one Buchner's tube is made to accommodate two samples in the following way. The tubes of Sample 1 are numbered with a blue pencil and the tubes of Sample 2 with a red pencil. Tubes 1 to 4 of each sample are then tied up into two bundles with elastic bands, the descriptive ticket which is inserted being written with a correspondingly coloured pencil. Tubes 5 and 6 of the two samples are bound together with an elastic band without any descriptive ticket. These three bundles are then slipped into the Buchner's tube one after the other and the tube corked. If the investigator only uses four milk tubes per sample then one Buchner's tube will accommodate three samples, descriptive tickets being inserted into each bundle. The utility of this modification is evidenced by the fact that 12 milk tubes can be examined at the expense of one Buchner's tube instead of 12 Buchner's tubes. As in the case of bacillus coli if the sample contain less than nine spores per cubic centimetre then the total number cannot be enumerated by means of these small tubes, unless an extra tube containing one cubic centimetre of the test fluid is put up for each sample. This, however is in real

unnecessary as any sewage effluent giving a negative result with 0·1 cubic centimetre would pass the provisional standard suggested by Dr. A. C. Houston in the Report of the Royal Commission on Sewage Disposal.

Practical application of the technique.—A few notes on the practical application of the technique described in this and the previous communication[2] will not be out of place. For example, let us assume that the investigator is dealing with an installation consisting of an open septic tank and a couple of aerobic filters, and that, further, the works are situated sufficiently far from the laboratory as to necessitate ice packing of the samples in ordinary circumstances. Modifications required for special cases will suggest themselves. The following is the apparatus required at the sewage works: Diluting pipettes and teats; sterile watch glasses; nutrient agar or gelatine slopes; nutrose agar slopes; two racks capable of holding eight tubes each; sterile water; sterile bottles for collecting samples; a spirit lamp; a bottle of methylated spirit; a centigrade thermometer; a pair of forceps; a pencil for writing on glass; and a bottle of lysol for cleansing the hands.

Packing of apparatus.—The diluting pipettes should be packed by themselves in a box that can be conveniently carried in the hand. As to the number required, the more one takes the quicker the work will be accomplished. As a minimum I would suggest four, which allows of one sample being done at a time without resterilising and gives a margin of one for casualties. The sample bottles should also be packed separately, the most convenient form being a short, wide-bottomed, glass-stoppered bottle of about 30 cubic centimetres capacity. At least four bottles will be required. The remainder of the apparatus is all packed in one box, but the packing of some articles requires special notice. The watch glasses should be sterilised in a copper cylinder such as is used for Petri dishes. This cylinder is then used to transport the watch glasses of which a large number should be taken. With regard to the tubes of culture media, the most convenient way of transporting them is to pack them in empty tobacco tins the bottoms of which are padded with cotton wool. An ordinary quarter-pound tobacco tin will hold nine tubes and so two tins will be necessary for each sample—one tin to hold tubes of ordinary nutrient agar or gelatine and the other to hold tubes of nutrose agar. Provision should be made for four samples. By means of a little cotton wool the tubes should be packed firmly in the tins to allow of as little play as possible. Before packing, the plugs and mouths of the tubes should be thoroughly flamed and the plugs thrust well home with a pair of forceps. If this precaution is not adopted some plugs are sure to become loosened and fall out in transit. The tubes should then be labelled and numbered from one to eight. The ninth tube being a reserve for emergencies, the label on it should be left blank. The remaining articles require no special mention. At the works the first step will be to choose a spot for carrying out the technique. The mouths of all the tubes should then be flamed and the plugs withdrawn to a convenient distance with the forceps. The watch glasses are then taken out and one superimposed above the other in pairs, the forceps after preliminary sterilising in the flame being used for this purpose. The pipettes are then sterilised in the flame and placed conveniently to hand. The watch glasses are then charged with the requisite amount of sterile water for making the dilutions and arranged in rows of three. The samples are then collected and the manipulations necessary for the enumeration of the total number of organisms and bacillus coli carried out. The two racks will hold the eight tubes of each series (ordinary nutrient medium and nutrose agar) during this part of the procedure. The tubes of each series are seeded alternately with the same pipette. When all the samples have been put up for the total number of organisms and for bacillus coli the sample bottles are then placed in a saucepan containing sufficient water to immerse the bottles almost up to their mouths. They are then heated to 80° C. for 15 minutes. On return to the laboratory the technique for the enumeration of the spores of bacillus enteritidis sporogenes, which do not alter in number during transit, is carried out. In this way the ice-packing difficulty is entirely overcome, whilst the apparatus required is not beyond the resources of a poorly equipped laboratory. I have subjected this method to the most rigorous tests of climate and transport for some months and have never had a

[2] Ibid.

breakage or a contaminated tube in the series of controls carried for this purpose. I have, further, never met with a contingency that could not be provided for on the spur of the moment, and I have therefore every confidence in recommending this method to those who are interested in sewage examination questions.

In conclusion, I should like to point out for the benefit of those workers who deal with more complicated problems in the question of sewage disposal, and to whom ice-packing and apparatus present no difficulty, that the use of the small tubes I have described for quantities of 0·1 cubic centimetre and less in the quantitative estimation of bacillus coli, streptococcus, &c., will so reduce the amount of apparatus and incubator space required that the number of samples capable of being dealt with at one time is greatly increased.

My best thanks are due to Captain G. Lamb, I.M.S., Director of the Pasteur Institute of India, and to Captain W. F. Harvey, I.M.S., Deputy Sanitary Commissioner, Punjab, for much valuable advice and assistance in the preparation of this paper.

Kasauli, India.

FIVE CASES OF TUBERCULOSIS TREATED WITH DR. MARMOREK'S SERUM.

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IN these days of many inventions hesitation must be felt in using a new therapeutic agent until there is evidence that there is a reasonable prospect of ensuing benefit and no risk of results directly or indirectly objectionable. The recent publication in various medical journals of evidence fulfilling these postulates in favour of the use of Dr. Marmorek's antituberculous serum has induced me to add thereto my own experience of this serum in the treatment of five cases of tuberculosis over a period of 16 months, during which time I have injected about 2000 cubic centimetres. This small experience has been so encouraging that I intend to make a more extensive trial and hope that others may be induced to use it too, so that sufficient scientific evidence may be collected to establish its actual value in the treatment of the different forms of tuberculosis.

The chief conclusions I have drawn from my own observations are as follows: 1. That the beneficial effects of the serum are most marked in the "surgical" forms of the disease. 2. That no objectionable features whatsoever follow the injections except those insignificant discomforts dependent on the introduction of the equine serum into the human body which are not due to the specific antitoxin. I refer to local urticarial rash, tenderness at the site of injection, and slight general malaise, all of which pass off in a few hours. Even these have been rare and in three of the patients entirely absent. 3. That pyrexia is diminished though the fall in temperature is sometimes preceded by an initial rise occurring within 12 hours, rarely exceeding 1° F. 4. That pain in the "surgical" forms of the disease is almost invariably alleviated. In the case of tuberculous peritonitis great relief was constantly experienced within 24 hours after the injection. In the case of hip-joint disease, too, this effect was well marked. 5. That the amount of sputum in pulmonary tuberculosis is rapidly diminished but that an initial increase takes place when the injections are commenced. 6. That in consequence of these results due to the arrested progress of the disease, the general health rapidly improves and the patient gains in weight.

As regards the dosage the method which Dr. Marmorek now recommends is the injection of five cubic centimetres every other day for three weeks to be followed by a clear three weeks' interval, after which the injections are repeated as before. I have not hitherto strictly adhered to this method and in one case have injected 60 cubic centimetres in 12 days, allowing a month's interval, with excellent results. The site of injection is preferably the abdominal wall or thighs and should be varied as much as possible. I have introduced the needle as deeply as possible without penetrating the deep fascia. Antiseptic precautions must of course be observed. An all-glass syringe is by far the most convenient and should be boiled every time before use. The usual serum needles are unnecessarily large. I have always cleansed the skin at the chosen site first with ether and afterwards with a few drops of saturated solution of chinosol, well rubbing with a pledget of cotton-wool, and have sealed the puncture with collodion and wool. If the patient complains of the discomfort of the insertion of the needle this may be overcome by the ethyl chloride spray. The temperature has been recorded every four hours and the sputum weighed or measured every day, and as often as convenient the patients have been weighed.

In recording the following cases I have endeavoured to state the facts concisely but faithfully without quoting unnecessarily full clinical observations from my case-book. I may here state that during treatment with the serum no other therapeutic measures have been pursued or drugs administered except those necessary for the regulation of the bowels.

CASE 1.—The patient, a man, aged 28 years, was first seen on Nov. 20th, 1903. There was a history of progressive enlargement of the abdomen accompanied by pain and fluid stools for one month. On examination the abdomen was found to be much distended, the umbilicus was prominent, and the respiratory movement was imperfect; it was everywhere tender, especially across the umbilical area. A moderate amount of free fluid was present in dependent portions; elsewhere it was tympanitic. The cardiac apex was displaced upwards and outwards. The liver dulness was increased upwards. The spleen was not felt. At the left pulmonary apex the resonance was impaired down to the third rib in front; over this area the breath sounds were harsh, with prolonged expiratory murmur, numerous crepitations, and exaggerated vocal vibration and vocal resonance. There was no cough or expectoration. The tongue was furred. The motions were loose and of yellow ochre colour. The blood and urine on examination were found to be normal. The pulse was 84, the respirations were 20, and the temperature varied between 99·2° and 100·4° F. In December the ascites was diminishing. Slight resistance was felt across the umbilical area. The physical signs at the left pulmonary apex were more marked. There were profuse night sweats and a steady loss of flesh. The temperature ranged from 99° to 100·6°, the pulse was 86, and the respirations were 24.

In January, 1904, the ascites was slight. An increased sense of resistance was felt across the umbilical area. The abdominal pain was severe. There was a considerable degree of emaciation. The temperature was the same as previously noted, the pulse was 86, and the respirations were 25. Early in this month considerable pleuritic friction was heard below the angle of the scapula at the right pulmonary base which extended to the anterior axillary line and was accompanied by slight pain on respiration. From Feb. 9th to April 6th 210 cubic centimetres of Dr. Marmorek's serum were injected in 30 injections. The abdominal pain was greatly relieved during each series. The condition at the end of this time was as follows. The abdomen was flat; there was no ascites; definite resistance was felt across the umbilical area, terminating in a hard, tender mass on the right side. Crepitations at the left apex were less numerous. There were no abnormal physical signs at the right base and no night sweats. The motions were semi-solid. The general condition was better and the appetite was good. The highest evening temperature throughout the period of injections was 101° and the lowest was 99°. The highest morning temperature was 99° and the lowest was 98°. From April 18th to 26th ten cubic centimetres of serum were injected. In May there was much diarrhœa accompanied by pain. During June the temperature was falling, varying between 98° and 99°. The pulse was 92. The physical signs at the left apex were less marked. In July there was much pain in the left side of the abdomen, together with visible peristalsis. The temperature varied between 97° and 99° and the pulse was 100. On August 26th and 29th there were rigors and very acute pain in the left side of the abdomen. The abdomen was tympanitic.

Early in September there was very marked and painful peristalsis starting from the left iliac fossa. Alternating diarrhœa and constipation were present. The pain was relieved by the former. The temperature was rising, the pulse was 106, and the general condition was worse. The symptoms pointed to partial intestinal obstruction in the left iliac fossa. On Sept. 22nd the abdomen was opened in the middle line. Everywhere there was much matting together of intestines, the peritoneum was studded with tubercles, and there were adhesions between the parietal

and visceral layers. Especially much matting and thickening were found where resistance had been felt and in the left iliac fossa. Here adhesions were gently broken down as far as possible but no definite constricting band was found. The abdomen was flushed out and eight ounces of sterilised water were left in before the wound was closed. Great improvement followed this operation with disappearance of the painful peristalsis. About the middle of October there was a recurrence of abdominal pain, with violent diarrhœa and increasing emaciation. From Oct. 22nd to Nov. 7th 60 cubic centimetres of serum were injected in six injections. There was no more diarrhœa after the first few injections. The pain was almost gone. The general condition was much improved. In December 20 cubic centimetres of serum were administered in two injections. The improvement was maintained.

From January to April 5th, 1905, 90 cubic centimetres of serum were given in 12 injections. The temperature was almost normal and the pulse was 80. The patient was rapidly gaining weight and there was no pain. At the end of June it was noted that the patient had gained three stone since August, 1904. He looked healthy and well, was much sunburnt, and could walk five miles without much fatigue. His temperature and pulse were normal. The bowels were regular. Nothing abnormal was felt in the abdomen. The pathological physical signs at the left apex had disappeared. The patient was desirous of resuming his occupation.

There was undoubtedly tuberculous infiltration at the left apex and probably the pleurisy at the right base, which was of long duration, was also of the same origin. The prognosis previously to treatment with this serum appeared absolutely hopeless to others in consultation as well as to myself. The laparotomy was imperative for the relief of obstruction and would not otherwise have been performed. Though the subsequent benefit was immediate and great it was only temporary and the patient rapidly lost ground again till the serum injections were recommenced. The patient is now apparently entirely free from any form of tuberculous disease. I think an error was made in discontinuing the injections through July and August, 1904. During these months I was abroad and left the treatment to the discretion of my locum-tenent.

CASE 2.—The patient was a man, aged 32 years. At the latter end of 1903 his left testis with the epididymis were removed for tuberculous disease. In May, 1904, he came under my care. On examination the lower part of the remaining epididymis was felt to be enlarged, hard, and nodular, the swelling being of the size of a large filbert. The testis was apparently slightly enlarged and somewhat tender. The patient informed me that the enlargement of the epididymis had taken place rapidly. From May 5th to June 5th 80 cubic centimetres of serum were injected in 16 injections. The testis became smaller and less tender. The affected portion of the epididymis was decidedly smaller. From June 10th to Sept. 30th 190 cubic centimetres of serum were given in 38 injections. At the end of this period the testis was apparently normal. The epididymis was also apparently normal with the exception of a nodule of the size of a pea at the lower end which felt softer and was adherent to the skin From Oct. 3rd to Nov. 7th 80 cubic centimetres of serum were given in 12 injections. On Oct. 15th the nodule was felt to be very soft and the overlying skin was becoming red. An incision was to have been made the next morning but the skin burst that night with a discharge of thin flaky pus. A slight discharge continued until Nov. 8th, when the patient had to return to London.

For the following notes I am indebted to Mr. H. S. Pendlebury. On Dec. 2nd the sinus was scraped. The scrapings were examined and found to be tuberculous. Serum injections were continued twice weekly, beginning 14 days after the operation and later at intervals of a fortnight up to the end of April, 1905. The thickening in the epididymis rapidly decreased. There was discharge from the sinus at intervals until June, when healing appeared to be complete. The patient's general health was excellent.

CASE 3.—The patient was a man, aged 48 years. In March, 1902, the right testis with the epididymis were removed for tuberculous disease. In December, 1902, there was tuberculous disease of the left epididymis which ended in suppuration with the formation of a profusely discharging sinus. In January, 1903, a tuberculous abscess developed over the left sixth costal cartilage. Later there was pain in the right hip and knee, which rapidly became acute, with limitation of movement at the hip-joint. The patient was confined to bed for three months and afterwards received open-air treatment.

In October, 1904, the patient came under my care. The epididymis was found to be much enlarged, hard, and nodular; a sinus at the inferior end discharged much thin flaky pus. A discharging sinus was observed over the sixth left costal cartilage; no connexion with the cartilage itself was felt with the probe. The right leg was kept at rest in a position of partial flexion and external rotation. Movement at the hip-joint was very painful and the range of movement was very limited. There was some wasting of surrounding muscles. The surface was hotter than the corresponding side and there was some tenderness on deep pressure. The pain in the hip-joint was constant and at times very acute; there was much referred pain in the knee-joint. The patient had been accustomed to hypodermic injections of morphine for the pain. He was losing weight, his general health was deteriorating, and local signs and symptoms were increasing in severity. From Oct. 12th to Dec. 12th 170 cubic centimetres of serum were given in 17 injections. The pain was steadily diminishing. The discharge from the sinuses was more watery and less in quantity.

From Jan. 5th to 22nd, 1905, 60 cubic centimetres of serum were administered in six injections. The pain was only very slight, the sinus in the chest had healed, the epididymis was smaller, and the discharge was clear and very slight. From Feb. 14th to March 2nd 60 cubic centimetres of serum were administered in six injections. The pain was entirely gone and the range of movement at the hip-joint was increasing. The general health was rapidly improving. From March 28th to April 12th 60 cubic centimetres of serum were given in six injections. The patient had gained 12 pounds in weight and had had no more pain. The sinus in the scrotum was almost healed. From May 19th to 31st 60 cubic centimetres of serum were injected in six injections. The patient was still gaining weight. The epididymis felt normal except for a very small nodule at its lower extremity. There was no discharge and the sinus appeared to be healed. Sexual desire, which had long been absent, was returning. The improvement in the condition of the hip-joint was maintained, there was no pain, and the range of movement was steadily increasing. The patient could walk with the aid of a stick for a short distance. He is still under treatment.

CASE 4.—The patient was a man, aged 50 years. In January, 1900, he had pleurisy with effusion at the right side, when paracentesis was performed. In 1901, three shot-like pellets were felt below the skin surrounding the site of introduction of the aspirating needle. In 1902, fusion of these pellets occurred and steady growth of resulting tumour which was diagnosed to be a lipoma. In July, 1903, the tumour extended from the spine of the scapula to just above the crest of the ilium. The diagnosis was unaltered. In September, 1903, the skin became reddened over the lower part of the tumour. The patient consulted a surgeon who advised immediate operation. On exploration the tumour was found to be a chronic thick-walled abscess, situated superficially, and on examination to be of tuberculous origin. The whole abscess sac was freely excised and healing took place by first intention with the exception of the lower end of the wound where a sinus formed, two inches in length.

In November the patient came under my care. Under gas the sinus was freely laid open and allowed to heal by granulation; this healing took place very slowly and irregularly and it was not until February, 1904, that it was complete. Towards the end several exposures to the x rays were made, which seemed to accelerate the progress. The patient went to the Riviera.

In May, 1904, a fresh focus of suppuration started at the upper end of the scar and on exploration the skin was found to be undermined for three inches in a direction at right angles to the original scar. This abscess sac was completely excised. Healing, however, was only partial and fresh sinuses formed in the line of incision and downwards beneath the old scar. The x rays were tried but did not seem to have any beneficial effect. In October the patient again came under my care. Under a local anæsthetic the sinus was slit up and packed with gauze. From Oct. 27th to Dec. 17th 140 cubic centimetres of serum were injected in 14 injections. During this time the wound after quickly assuming a healthy appearance healed rapidly by granulation, healing being complete by Dec. 4th. The patient

gained six pounds in weight and professed himself feeling in better health than he had been for years. No inconvenience whatsoever was experienced from the injections, which were made in the neighbourhood of the sinus, and at no time was the patient confined to bed longer than was necessary for the daily dressing. In July, 1905, the scars looked very healthy and there was no appearance of recurrence.

CASE 5.—The patient was a woman, aged 28 years. This case is still under treatment. There is tuberculous infiltration of both pulmonary apices with some consolidation at the right apex. The serum treatment was started in February of this year when the patient, after undergoing sanatorium treatment for months, was steadily losing ground. Bacilli have been found in the sputum on every occasion. From February to the end of June 170 cubic centimetres of serum were given in 34 injections. The patient rapidly gained weight at first and the cough and expectoration diminished but since then her condition has remained unaltered. No definite opinion can be deduced at this stage. A six weeks' interval has been allowed to elapse before recommencing the injections.

In conclusion, I wish to thank Dr. Marmorek for his unfailing courtesy and kindness in supplying the serum and for the valuable advice he has given me from time to time.

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Ventnor.

A CASE OF PNEUMONIC PLAGUE.

BY H. B. OSBURN, M.R.C.S. ENG., L.R.C.P. LOND., D.P.H. CANTAB.

BY the Venice Convention very strict precautions are taken with regard to the crews of vessels leaving plague-infected ports. Besides being under observation for some days previously, on the day before departure every man is closely examined by one of the health officers. After this their effects are all disinfected and they are not allowed to land. Again, on the day of departure there is another very close inspection. At these inspections any man with the slightest unexplained rise of temperature or with any recent glandular enlargement, however slight, is rejected. Lastly, for the nine days after leaving port there is a daily inspection of all the native crew by the surgeon of the ship.

On the sixth day after leaving port, at morning inspection, one of the Lascars seemed feverish. The temperature was found to be 100·5° F. The patient, a young, healthy native, looked well and was doing his work; the tongue was clean and there were no enlarged glands or symptoms of any kind. Slight rises of temperature are very common among natives, and in accordance with the usual routine in such cases he was given an aperient and told to report himself next morning. At 7 A.M. next day he came to the surgery looking very ill, with a frequent short cough and with a temperature of 106°; the tongue was fairly clean and there were no glandular enlargements, no pain, and no other symptoms. He was at once isolated in a tent on the boat deck with a native attendant. Two hours later, the patient being in a semi-comatose condition and having a temperature of 106·8°, he was packed in ice, the temperature then falling to 104·5°. The pulse was 120 and the respirations were 28. Examination of the chest gave slight dulness over the right base behind and (?) increased vocal resonance; sibilant rhonchi and a few râles were heard here and there over both lungs but no tubular breathing. But accurate auscultation is impossible on a ship at sea owing to the noises of the engines and the wind. The cough was frequent, with a white viscid expectoration. There was slight improvement during the day and a further examination of the chest revealed only the same physical signs as those noted in the morning. There was now a constant expectoration of white viscid mucus which, of course, was received into a solution of perchloride of mercury. The patient's mind was quite clear.

On the following day the symptoms were entirely those of severe pneumonia, excepting that the physical signs continued to be of the irregular character noticed at the first examination. The temperature, which dropped to 102·5° in the morning, rose to 105·2° at 4 P.M. The patient's mind kept clear; there was still the same expectoration. Towards evening marked injection of the conjunctivæ was noticed.

The next day, being the fourth from the commencement of the disease but only the third from the onset of severe symptoms, the patient and his attendant were removed to an infectious hospital by the order of the local sanitary authority, where he died. The diagnosis of pneumonic plague was eventually confirmed bacteriologically.

No other cases occurred on the voyage, which lasted 13 days after the patient's removal from the ship. No dead rats were found either before or after the case.

There are here unusually exact data for calculating the period of incubation, which must have extended from at least a day before departure to the morning when the first symptoms were noted—that is, seven clear days. But for the daily inspection the case would not have been detected until the next day, as the man was at work and apparently well when first observed, only the fact that he felt hot to the touch causing him to be further examined; the onset of the severe symptoms was at least eight days after possible exposure. The question of rats of course may be raised but no dead rats were found either before or after, which is quite evidence enough that plague did not exist among them. When it does, the way a ship becomes littered with dead rats is quite unmistakeable.

With regard to the diagnosis, the only doubts were as to whether at first it was a possible case of sunstroke; and later, when the chest symptoms became clear, as to how it could be differentiated from an ordinary acute pneumonia. The exceedingly severe onset, the irregular character of the pneumonia of broncho-pneumonic type, the height of the temperature without correspondingly severe pulmonary involvement, and the marked injection of the conjunctivæ all pointed to the invasion of the lungs by something other than the ordinary pneumococcus.

The satisfactory feature of the case was the restriction of the disease to the one man attacked and this in a ship with nearly 600 people on board of whom more than one half were natives. The prompt isolation in a tent on the boat deck, in a free current of air and light, and where absolutely efficient sterilisation could be secured afterwards, is mainly responsible for this. Any attempt to isolate a case of this kind in a cabin would have probably led to dissemination of the disease.

As to treatment, it consisted mainly in the meeting of symptoms as they arose; a distinct amelioration was noticed after the administration of salicylates and the condition of the patient did not seem so hopeless. The necessary removal of the patient to the hospital probably accelerated the fatal ending.

BIDEFORD INFIRMARY.—The sum of £102 has been handed to the authorities of the infirmary at Bideford, Devon, as the result of a house-to-house collection recently made in the town.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF NÉLATON'S OPERATION FOR INTESTINAL OBSTRUCTION.

BY GEORGE P. NEWBOLT, F.R.C.S. ENG.,
SURGEON TO THE ROYAL SOUTHERN HOSPITAL, LIVERPOOL.

ALTHOUGH it is possible in the majority of cases of intestinal obstruction to judge pretty accurately of the nature of that obstruction, yet cases still remain in which after exhausting every available means the diagnosis remains uncertain. If the patient is in good condition and there is not much abdominal distension it is permissible to spend time in exploring, but where the patient is suffering from abdominal distension due to an obstruction of some days' standing anything more than a rapid operation without handling or exposure of the intestines is likely to prove fatal. In this class of case the old operation of drawing up, fixing, and opening the nearest distended coil of intestine as practised by Nélaton still remains to us.

On July 4th, 1904, I was called by Dr. R. D. Evans of Blaenau-Festiniog to see a man, aged 45 years, who was suffering from acute intestinal obstruction. The onset was insidious but was followed by vomiting and total obstruction, no flatus having been passed for 24 hours before I saw him. On examination the abdomen was found to be tightly distended, the pulse was rapid, there was fæcal vomiting, and the tongue was dry. External investigation revealed no cause for the obstruction but as the man had lost flesh I thought that there might be a malignant stricture in the sigmoid flexure.

On opening the abdomen as if for left inguinal colotomy the sigmoid flexure was found to be empty and I therefore fixed the distended small intestine to the abdominal wall, tied in a glass tube, and drained the intestine. A large amount of fæcal matter drained away and as the result the man recovered with an artificial anus in the left iliac region. On Oct. 10th he was sent to Liverpool in order to have the artificial anus closed. The skin around was then eczematous and the discharge at times was watery; portions of undigested food passed at intervals and presumably the opening was high up in the small intestine. The bowels had acted naturally 12 times since the operation. On Oct. 13th an enema of sulphate of magnesium was given through the lower opening of the artificial anus and this was followed by a large stool per rectum. Being convinced that there was a free passage I had the patient anæsthetised and after failing to feel anything abnormal in the abdomen by means of a finger in the artificial anus I clamped the spur. Though this was done on several occasions and an india-rubber tube was placed in the lumen of the gut yet there was no tendency for the motion to pass the right way. The bowels acted normally after an enema but the greater part of the motion passed by the artificial anus.

On May 9th, 1905, I opened the abdomen to the right of the enterotomy wound, having first packed off the latter with gauze. The intestine running up to the artificial anus forming a tube some two inches long was clamped in two places and divided. The end near the artificial anus was everted through the latter and cut away; the other end was sutured, thus closing the opening into the small bowel. The abdomen was closed but great difficulty was experienced in covering over the wound left in the site of the artificial anus. Here the skin was congested and as tight as a drum and it was only by undercutting and sliding the skin that the gap could be filled. The state of the patient caused some anxiety for the first four days as his temperature rose to 102° F. and his pulse-rate to 144, but this had happened before when the spur was clamped. His bowels were moved by an enema five days after the operation and from this time his recovery was uninterrupted. He was able to return home on July 19th and at present is in good health, his bowels acting regularly without an aperient.

The cause of the obstruction was probably inflammatory as when the abdomen was opened in the final operation I found the small intestines adherent to one another in several places but there was no trace of any other change. The clamping of the spur in this case utterly failed to close the artificial anus. Although on the present occasion the operation was a success this is not always, or even often, so. Two cases, both of which terminated fatally, are reported in Vol. XXI. of the Transactions of the Clinical Society, but here there was a volvulus of the cæcum in each instance. I remember a case operated on successfully by the late Mr. Morrant Baker at St. Bartholomew's Hospital in the early "eighties." Sir Frederick Treves says: "It is an operation done in the dark and it leaves the cause of the disorder untouched." But surroundings have to be taken into consideration, and given a case in a small house in the country if the patient can be tided over an acute attack by a palliative measure it is possible that a more scientific operation may be performed successfully at a later stage under more favourable conditions. As a remedy in a desperate case I think it will still remain as a possible way out of difficulties.

Liverpool.

A CASE OF MERCURIAL POISONING.

BY ALFRED WIGHTWICK, M.B., CH.B. VICT.

THE following case is, I think, of some interest. The patient, who had apparently been invaded by pediculi pubis, the infection extending to the axillæ, had freely applied ointment of mercury, using the contents of four boxes, each holding about three drachms two scruples, in the course of three or four days. The night-gown had become discoloured with it and it seemed likely that during the night the face had been rubbed with the hands on which there was probably some ointment. The patient then complained of "nettle rash," which became worse towards evening. The irritation was intense, coming on in paroxysmal attacks, especially at night, the affected parts showing marked signs of scratching. The skin over the lower part of the abdomen was of a bright red colour extending down over Scarpa's triangle. The inguinal glands were enlarged and tender. The axillæ were red, swollen, and tender, palpation causing much pain. The glands felt enlarged. The flexor surfaces of both elbow joints were red, swollen, and painful, the patient saying they were so stiff and swollen that it was impossible to bend them to the full extent. The skin was coarse and desquamating. At times patches of redness, described as "flushings" or "blotches," appeared over the upper part of the chest. There was some swelling under the eyes and the face was described as "all swollen up and blotchy, the upper eyelids so swollen and stiff that the eyes could hardly be opened, the eyelashes standing straight out and the lower lids baggy." Anyone looked at across the room appeared in a mist, the eyes feeling very sore. The edges of the ears were inflamed and tender and later desquamated. The salivary glands were swollen, extremely tender, with increased secretion. The slightest pressure on the teeth caused pain and they generally ached. The gums were swollen and tender, especially so on the inner surfaces. This extended to the palate. The tongue felt "too large for the mouth" and was painful across the dorsum. There was an objectionable taste and odour of the breath was noticed. Though much nausea was present actual vomiting occurred but once or twice, the sensation being that of a bad bilious attack with inability to be sick. The bowels were normal. Headache was severe, feeling as if the two halves of the head, right and left, were being knocked together. The muscles generally, but especially those of the back and thighs, felt as if they were being pinched up, and trembling was noticed in the hands. This continued for a day or two. When getting out of bed one evening the legs felt very weak, the room appeared to go round, and the patient nearly fainted. A week after the appearance of symptoms the patient felt dull with great inclination to sleep, there were "pins and needles" in the extremities, and the bowels were somewhat constipated. This was followed by diarrhœa and the local patches of cutaneous irritation considerably subsided, though in the lower extremities the irritation had extended to the popliteal spaces. This improved in a day or two, the inflammation of the salivary glands with the general tenderness of the mouth being the last symptoms to disappear. I saw the patient some little time after and learnt that there had been a slight return of the cutaneous irritation but that it had only lasted a short time.

Reviews and Notices of Books.

Human Physiology: prepared with Special Reference to Students of Medicine. By JOSEPH HOWARD RAYMOND, A.M., M.D., Professor of Physiology and Hygiene in the Long Island College Hospital, New York City. Third edition. London, Philadelphia, and New York: W. B. Saunders and Co. 1905. 8vo. Pp. 687. Price 15*s*.

WITHOUT undergoing perceptible enlargement, which is no faint praise in these days of large students' manuals, this the third edition of Professor Raymond's sensibly written treatise has been very thoroughly revised and most of the recent advances in the subject of which it treats have been incorporated in the text. Amongst the more important of these are the researches of Professor Chittenden on Physiological Economy in Nutrition; of Captain Munson on Army Rations; and Mary Abel on Legumes and Sugar as Articles of Diet, all of which represent work done in America and published in American bulletins, reports, and journals, and therefore not likely to have met the eye of the English reader. The author has evidently paid much attention to the subject of food, and the section devoted to it is really very good, being both clear and accurate as well as concise. There is also an account of recent work upon alcoholic beverages in common use. It appears that from various analyses made by the Board of Health of the State of New York the composition of different samples of whisky and brandy varies within rather wide limits, quite independently, we presume, of retail adulteration. Thus the alcoholic strength of brandy varies from 30·80 to 50·40 per cent. by volume and from 25·39 to 42·96 per cent. by weight. Whisky contains from 44 to 50 per cent. by weight, or from 50 to 58 per cent. by volume of alcohol. Sherry again contains from 16 to 25 per cent. of alcohol. It seems reasonable to draw the conclusion that the different effects produced in those who consume similar quantities of spirit may be in part attributed to the unequal strength of the particular liquor which they habitually drink. Physiologists are by no means agreed as to the action of alcohol in digestion, some believing that it retards, others that it promotes that process. Professor Raymond, in commenting on alcohol as food, remarks that by virtue of the carbohydrates and salts which wines and beers contain they certainly have a food value entirely irrespective of the alcohol which is also one of their constituents. The compound ethers are regarded as assisting digestion by promoting the secretion of the digestive fluids, while the bitter principles are well-recognised stomachic tonics. Used in moderation they are therefore not injurious but used to excess there is danger of their producing superfluous fat, imperfect oxidation, and a resulting plethoric and perhaps gouty diathesis. To the further question, whether alcohol is itself a food, Professor Raymond gives a definite reply, grounding his opinion upon the elaborate experiments of Professor Atwater, that it is undoubtedly a food, but that it is not a necessary food, and that young people at least will act most wisely in abstaining from alcoholic beverages. But he considers it an error to believe that alcohol taken in moderate quantities and in dilute solution acts as a poison, as advanced by total abstainers.

Professor Raymond has introduced new sections into his book describing the movements of the human stomach and intestines as given by Dr. Cannon, as well as others upon hæmolysis and bacteriolysis and on the effect of cold on bacteria. In the sections on hæmolysis and bacteriolysis the globulicial property of the serum is explained as being due to alexins proceeding from leucocytes, whilst the property of agglutinating the bacilli of typhoid fever and the red blood corpuscles is stated to be due to certain agents in the serum named agglutinins and hæmagglutinins. Neither these nor the agents named—cytotoxins, leukotoxins, spermatoxins, and precipitins—have been isolated. Precipitins, obtained by injecting the dissolved albuminous bodies of one species of animal into another, have been employed for the identification of blood-stains, though much technical knowledge is required to procure satisfactory results.

The conditions present in ovarian and abdominal pregnancy are described by Professor Raymond who seems to be in accord with Webster that cases of ectopic pregnancy are rare, and that no gestation can begin its development except in some part of the genital tract derived from the Müllerian ducts such as the uterus and Fallopian tubes. This view as the author observes, rules out both abdominal and ovarian pregnancy. The treatise as a whole represents very well the present state of physiological knowledge as required by medical students and practitioners.

The Practical Study of Malaria and other Blood Parasites. By J. W. W. STEPHENS, M.D. Cantab., D.P.H., Walter Myers Lecturer in Tropical Medicine, University of Liverpool; and S. R. CHRISTOPHERS, M.B. Vict., Lieutenant I.M.S. Second edition; illustrated. London: Williams and Norgate. Published for the University Press of Liverpool. 1904. Pp. xliv. + 396.

WITHIN 12 months of the first issue of this work a second edition has been demanded. This is partly due to the rapid sale of the first edition and partly to the fact that the advances in tropical medicine during 1903–04 were so rapid and so important that in any work pretending to keep pace with recent knowledge a new edition was imperative. The arrangement of the text follows the plan adopted in the first edition and the excellence of the paper, printing, and illustrations, to all of which we have already borne testimony, is maintained.

Chapter I. is devoted to the preparation of blood films; in Chapter II., normal blood is analysed and the various forms of leucocytes are described. Chapters III. to VI. deal with the malaria parasite in its various aspects and the changes which its presence sets up in the blood, the organs, and the tissues of the body. The important subject of mosquitoes, their anatomy, their life-history, and classification occupies a large part of the volume, no less than 16 chapters (VII. to XXII. inclusive) being devoted to it. Chapters upon blackwater fever, the hæmamœbidæ, the hæmogregarines, the trypanosomata, the Leishman bodies, the spirochætes and spirillar fever serve to indicate the rapid advance in our knowledge of tropical ailments, for when the first edition of this work was issued in 1903 the parasites associated with these diseases, and even the diseases themselves, were unknown. The list of anophelines grows in length at a bewildering rate and the species of mosquito continue to increase as the field of observation extends. Four new coloured plates representing the piroplasma bovis, the trypanosomes of man, birds, frogs, and rats, and the Leishman-Donovan bodies contribute to the completeness and excellence of as well-written and clear an exposition of the subjects dealt with as we could wish to read.

Text-book of Legal Medicine. By FRANK WINTHROP DRAPER, A.M., M.D. Harv., Professor of Legal Medicine in Harvard University; Medical Examiner for the County of Suffolk, Massachusetts; Medico-Legal Pathologist at the Boston City Hospital. Fully illustrated. London, Philadelphia, and New York: W. B. Saunders and Co. 1905. Pp. 573.

THIS volume is intended primarily as a help to students in acquiring the elements of legal medicine but it is also adapted to the needs of practitioners who wish to have at their service the latest advances in medical jurisprudence. Dr. Draper, as a "medical examiner" for the city of Boston

for 28 years, has had a large experience in the investigation of the death of individuals in suspicious circumstances. This adds a personal element to his writings which renders the text-book all the more interesting. In addition he cites numerous illustrative cases selected from the standard treatises of forensic medicine. We consider that the description of cases that have actually been brought before the various courts of law is a valuable addition to a work of this nature. It renders a study of the subject more attractive and it also helps in impressing upon the memory of the student the numerous complicated facts which it is necessary to recollect when conducting a medico-legal examination.

The subjects of toxicology and of the medico-legal relations of psychiatry have been omitted from this work. Dr. Draper considers that they have acquired such an importance that they require independent treatment by observers who have made them a special study. He makes some interesting remarks, however, in Chapter XXX., on "Murder by Poisoning," wherein he sets forth in a concise manner the duties of a practitioner when brought into contact with a case of suspected poisoning. Such a position is replete with difficulties; the proper course to pursue is one that may well give rise to great anxiety, and it is useful for the practitioner to have a line of conduct arranged for him.

The whole work is well written and contains a vast amount of information. This will be found easier for American than for English students to apply, since in citations of the law Dr. Draper has confined himself to Massachusetts statutes. His reasons for thus acting may be described as patriotic, for he states in the preface that he believes that "these citations represent the most progressive and most intelligent expression of modern jurisprudence." Perhaps; anyhow the English student of the book will find in it much that is valuable as well as interesting.

From Tokio through Manchuria with the Japanese. By LOUIS LIVINGSTON SEAMAN, M.D., LL.B. London: Sidney Appleton. 1905. Pp. 268. Price 6s.

Dr. Seaman's book is full of interest for medical readers, especially those belonging to the naval and military services. He was well qualified for the work of authorship by the varied experience of military surgery and foreign travel which he had acquired as a surgeon with the United States Volunteers in the Spanish-American war which commenced in April, 1898, in the subsequent war in the Philippine Islands, and with the allied armies in the Boxer campaign in China during 1899 and 1900. Dr. Seaman's object in proceeding to the East was to see medical and surgical work in Japan and in the military base and field hospitals as near the front as practicable, but when he arrived in Tokio on June 20th, 1904, accompanied by his friend, Dr. Alexander Trautman of New York, he found that it was impossible to approach the seat of war. Permission was only given to inspect the reserve hospitals in Japan and the hospital for Russian prisoners at Matsuyama. He first visited the military hospital at Hiroshima, then the prisoners' hospital at Matsuyama, then the shipbuilding yards, gun foundries, and machine shops forming the naval base at Kure, and finally the other naval base at Sasebo, where the chief naval hospital is situated. Of the hospital at Hiroshima he says: "Up to the time of our first visit in July there had been more than 600 operative cases and only six deaths. In one of the wards we found 15 surgical cases, six of which had experienced hæmorrhages from the lungs and several in the abdominal cavity as the result of bullet perforations. All were recovering and 10 were able to stand and remain in that position while we were in the ward. Nine patients had been shot through the brain, the orifice of entrance and exit being plainly visible. All were recovering. Another case was that of a man shot directly over the region of the heart. There was no point of exit for the bullet and he probably carries it around with him to-day. Another man was injured by a ball which entered beneath the middle of the right clavicle and went through the lungs."

Dr. Seaman's experiences and impressions seem to have been singularly like those of the author of five articles which have already appeared in our columns under the heading of "Medical Notes from the Far East."[1] In fact, these gentlemen may have met one another, for they were both in Niuchwang at the time of its hasty evacuation by the Russians in the end of July, Dr. Seaman having left Japan for a visit to Manchuria, *viâ* Chifu, and the other being on his way to Japan, *viâ* Shanghai. From Niuchwang Dr. Seaman proceeded to Hsin-Min-Tung, a Chinese town, about 20 miles from Mukden. Here his introductions procured for him the friendship, or at least the hospitality, of the chief of the organised bandits, designated in English spellings as the Hung-hutzes or Chun-chuzes, with several variant forms. After a series of adventures among these people he returned south in order to make his homeward journey to America, *viâ* Shanghai, as he had to read a paper at the International Congress of Military Surgeons to be held at St. Louis. Chapters XIII. and XIV. of the book are devoted respectively to descriptions of the Japanese Red Cross Society and of the methods adopted for the prevention of disease in the Japanese army. Dr. Seaman's narrative is written in a graphic style and contains a number of views, portraits, and other illustrations.

Diet in Health and Disease. By JULIUS FRIEDENWALD, M.D., Clinical Professor of Diseases of the Stomach in the College of Physicians and Surgeons, Baltimore, and JOHN RUHRÄH, M.D., Clinical Professor of Diseases of Children in the College of Physicians and Surgeons, Baltimore. London, Philadelphia, and New York: W. B. Saunders and Co. 1905. Pp. 689. Price 18s. net.

THE scientific study of dietetics and the adjustment of diet to the metabolic needs of the organism as a result constitute a great advance on the older empiric methods of constructing diet scales. The preparation of balance-sheets of intake and output both of carbon and nitrogen, and the study of heat values, have combined to place dietetics on a clear scientific basis. In the volume before us a great deal of useful information has been gathered together by the authors, the work being chiefly a compilation of the views of a great number of authorities, frequently given in their own words.

For the arrangement adopted in this work we have nothing but praise. After a general discussion of the problems involved in the chemistry and physiology of digestion the various classes of foods are considered in detail, with special reference to their origin, preparation, composition, and heat values. Beverages and stimulants are next considered and similar information is given with regard to them. Various factors are then discussed in relation to diet, such as concentration, preservation, adulteration, and the occurrence of food poisoning. The feeding of infants, diet in special physiological conditions, and special methods of feeding—such as by enemata and feeding by the nasal tube and stomach tube—are then described in some detail. More than half the book is taken up by an account of diet in disease, each disease being considered separately, and diets appropriate to the condition being suggested. At the end army and navy rations and prison, hospital, and other institution dietaries are given, with various recipes for preparation of food substances for use in the sick-room, together

[1] THE LANCET, Sept. 24th (p. 920), Oct. 1st (p. 982), and Oct. 8th (p. 1047), 1904; and Jan. 28th (p. 256) and Feb. 11th (p. 391), 1905.

with tables of foods permitted and lists of food prohibited in certain diseases. Except in the sections devoted to diet in disease of the stomach and intestines and to the feeding of infants, where the authors give their own experiences, the diets given are mostly quoted from other authors, and liberal extracts have been made, especially from the works of Atwater, R. Hutchison, Wegele and von Noorden. A considerable degree of repetition occurs, but this is almost unavoidable and is, perhaps, not a disadvantage in a work of this kind which is intended primarily as a work of reference. The authors state in their preface that they have "tried to tell the doctor how to feed his patient," and it will be convenient for the medical man to find what he wants to know quickly. The accounts given of procedures such as rectal feeding and feeding with the stomach tube are detailed and eminently practical. The sections devoted to the feeding of infants and to diet in diseases of children are very comprehensive and contain details of the complicated methods of modification of milk used in the United States. Of these no less than eight separate ones are given, nearly all of them requiring some considerable amount of calculation, so that the information may not be of great use to the busy practitioner, which is stated in the preface to be one of the aims of the work. So-called "laboratory feeding" is, without doubt, a very valuable method of adjusting the diet to the needs of an infant when breast feeding is impracticable, especially in towns, but it is certainly not available in ordinary practice among the poorer sections of the community or in hospital practice, and the simpler and yet effective methods adopted under such conditions might with advantage have been included in the book.

Though there is much to commend in this work yet it is open to criticism in some respects. The account given of the chemistry and physiology of the digestive processes is meagre and by no means up to date. There is practically no reference to the valuable researches of Pawlow and none to important recent work on secretin and enterokinase. The classification of nitrogenous substances is far from satisfactory; fats are referred to as hydrocarbons and in the chemistry of milk the coagulation of caseinogen by ferments is confused with its precipitation by acids. There are not a few misprints and inaccuracies and it is a disadvantage that where several diets are suggested for a given condition little reference is made to their relative values in the authors' opinion.

The Edinburgh Stereoscopic Atlas of Anatomy. Edited by DAVID WATERSTON, M.A., M.D. Edin., F.R.C.S. Edin., F.R.S.E., Lecturer and Senior Demonstrator in the Department of Anatomy, Edinburgh University. Section II.: Abdomen. 50 stereographs. Edinburgh and London: P. C. and E. C. Jack. Price of section £1 5*s.* net. (Price of entire series of 250 stereographs £6 5*s.* net.)

WE find that the second section of this stereoscopic atlas is of equal excellence with the first. There are 50 plates in this instalment of the work and they are divided into the following sections: (1) Abdominal wall; (2) Inguinal region; (3) Abdominal cavity; (4) Viscera; (5) Abdominal aorta; (6) Pelvis; and (7) Bladder.

The plates illustrating the abdominal wall convey a good idea of the arrangement of the muscular and fascial planes, the position of the linea semilunares, and the extent of the rectus muscle, though the use of two sets of numerals in the first illustration is confusing. The series which illustrates the inguinal region comprises plates which should be of great value in explaining the anatomy of inguinal hernia. We found it difficult to recognise the pillars of the external abdominal ring in the superficial dissection as illustrated, and the relations of the external saphenous vein to the fascia of the thigh are not so clearly brought out as they might be, but on the whole the plates are excellent. The seven illustrations of the abdominal cavity are especially useful from a medical or surgical point of view. The various hollows or recesses and the positions occupied by the different parts of the intestine are shown. The peritoneal reflections stand out well and one of the plates shows the deformities and malpositions due to tight lacing in a striking manner. The anatomy of the viscera is very satisfactorily demonstrated by means of 21 illustrations, many of which contain more than one view. In addition to the viscera there are views of the stomach bed and of the liver bed when the contained viscus has been removed. Eight plates are devoted to the pelvic cavity, and these illustrations are also very good, although the perspective tends to be exaggerated. In fact, in the whole of this series the various hollows and recesses appear deeper than is natural, whilst the projection of the spinal column into the abdominal cavity is too great.

We are inclined to think that the atlas will not be extensively used by students in their earlier years of medical study. It is necessarily an expensive work, and students of anatomy will always be encouraged by their teachers to learn their work upon the actual body and not to rely on plates, however excellent they may be. In the case, however, of the advanced student and qualified man the matter is different. To students of this class we can conceive that a work like the present may be a great boon and it is to the attention of them that we commend it particularly, in congratulating Dr. Waterston on the progress of his undertaking.

LIBRARY TABLE.

A Primer of Physiology. By E. H. STARLING, F.R.S. London: John Murray. 1904. Pp. 126. Price 1*s.*—This instructive little manual is intended to convey to those who are desirous, as the author remarks, of learning something of the manner in which the normal processes of life are carried on and the broad features of the great functions by which life is maintained. Before, however, even these can be understood the general reader must possess a knowledge of the fundamental facts in physics and chemistry. He must have learnt that each of these sciences has been built up by countless experiments which have collectively shown that nature is invariable, that when the conditions are the same the results are the same, and that if the conclusions drawn by different observers dealing with the same phenomena differ, such difference is due to some condition that has been overlooked in the experiment. The processes that are carried on in the living body are in the highest degree complex and at first sight inscrutable, but careful observation and full reliance on the inviolability of the rules, or, as they are termed, the laws of nature, have enabled physiologists to recognise the physical and chemical processes which accompany many of the manifestations of life. Professor Starling's work may be advantageously read by every medical student before attending a course of lectures on physiology, as it will supply him with a general idea of the subject he is about to study and will enable him to follow intelligently the more extended account of each function that his professor will give in his successive lectures.

The Physiological Aspect of Dietary. By A. S. WAUCHOPE-WATSON. London: Adams Bros. 1905. Pp. 95. Price 2*s.* 6*d.*—The author sets before himself the excellent aim of instructing the public (which, he rightly says, "is led by the great motive power of advertisement rather than by that of actual fact") in the science of proper feeding in sickness and in health. A really satisfactory knowledge of dietetics cannot, of course, be gained without an intimate acquaintance also with the functions of the body and of general

chemistry, but definite facts, the outcome of such acquaintance, can be given in elementary treatises to considerable public advantage. The author, on the whole, makes very sound observations in regard to the nutritive value of the various foodstuffs, his remarks on wines and spirits being decidedly to the point. There is an excellent chapter on beef tea. Occasionally the author is apt to overlook the importance of the digestibility of a food as a factor. A section on the feeding of infants contains some discreet remarks, but the composition of a food is one thing and the question of its digestibility another. In discussing gout and uric acid all mention is omitted of the most important factor in food in this connexion—namely, the purins. Again, we think that the remarks about cocoas are too meagre; the supply of cocoa was never more satisfactory than it is at the present time and its adulteration with starch, which he lays some stress upon, is exceptional. It is, further, doubtful whether cocoa is improved, dietetically speaking, by "enriching" it with proteid. On the whole, however, the author's observations are in accord with modern knowledge.

The Court Ships of Catherine the Great. By PHILIP W. SERGEANT, B.A., late Scholar of Trinity College, Oxford. With six illustrations. London: T. Werner Laurie. 1905. Pp. 337. Price 10s. 6d.—Mr. Sergeant may be congratulated upon having produced a work that shows unusual care. His book, however, is disappointing in some respects and particularly in that it fails to enhance the attractiveness of a subject which is of itself intensely interesting. To deal with such a character as that of the great Catherine and only just to interest your reader is to fail in some measure. We do not ask for an enhanced interest at the expense of strict and historic truth, but we regret the occasional dulness of the work. Its great merit, however, is the scholarly accuracy of its pages and for any reader who wishes to know the truth of Catherine's private and political life we can imagine no safer guide. We need not emphasise the interest which that private life has for any student of human nature or of the evolution of European politics in the eighteenth century.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

JOTHION.

(THE BAYER COMPANY, LIMITED, 19, ST. DUNSTAN'S-HILL, LONDON, E.C.)

JOTHION appears as a clear, slightly yellow oil, containing as much as 80 per cent. of iodine. We have not before examined a liquid containing such a high proportion of the element available for administration as such. On treatment with nitric acid an abundance of iodine is liberated. The excipient is readily saponifiable and is in reality an ester. On rubbing a few drops of the oil on the palm of the hand no stain is produced and in a short time the taste of iodine is evident in the mouth. The oil is perfectly miscible with other oils, as, for example, olive oil, and with alcohol, and may be readily incorporated with lanoline for the preparation of an ointment. Jothion is not miscible with water. It is obviously an excellent preparation for the administration of iodine by painting on the skin or by inunction, whether for local application or for general administration as a substitute in the latter case for the mineral iodides. The iodine is very rapidly absorbed.

YEAST PREPARATIONS.

(LA ZYMA, LTD., CLARENS, MONTREUX, SWITZERLAND. AGENTS: T. CHRISTY AND CO., 4, 10, AND 12, OLD SWAN-LANE, LONDON, E.C.)

According to our examination these preparations consist of carefully prepared yeast (torulæ cerevisiæ). We found them all to be exceedingly active. The preparations examined included "furonculine dried yeast," "antidiabetic yeast," a dried yeast for veterinary use, and a yeast known as "staupe-antigourmine," which is stated to be a specific cure of dog's distemper. We examined the antidiabetic yeast and found it to be an active preparation and free from sugar. It is obvious from the results obtained that these yeasts are prepared with considerable care and therefore may be trusted for therapeutic purposes.

DRUEDA BREAD.

(F. SUTTON, 11 AND 13, HIGH-STREET, SALISBURY.)

The features of this bread, according to the results of our analysis, are a rich proportion of proteid and of mineral salts, including the phosphates. An analysis of the moist bread gave the following results: proteid, 12·78 per cent.; mineral matter, 1·70 per cent.; and moisture, 42·00 per cent. The bread yielded nearly 10 per cent. of its substance to cold water and amongst the soluble constituents was proteid. The bread is of excellent texture and of good flavour. It shows a nourishing value decidedly in excess of that of ordinary white bread.

CHAMPAGNE.

(JOSEPH PERRIER, FILS, ET CIE., CHALONS-SUR-MARNE; LONDON, OLD TRINITY HOUSE, WATER-LANE, E.C.)

The samples examined were both derived from the 1900 vintage. Cuvée Royal 1900 gave the following results on analysis: alcohol, by weight 10·69 per cent., by volume 13·24 per cent., equal to proof spirit 23·21 per cent.; extractives, 3·24 per cent.; mineral matter, 0·09 per cent.; volatile acidity reckoned as acetic acid, 0·08 per cent.; fixed acidity reckoned as tartaric acid, 0·64 per cent.; sugar, 1·43 per cent.; and ethers reckoned as ethyl acetate, 0·06 per cent. This is a wine showing decided quality. It is distinctly dry, the sugar not exceeding 1·43 per cent., while it is free from undue acidity. The wine was in sound condition and contained practically no volatile acidity. It has very pleasing qualities. The wine marked First Quality 1900 gave the following results on analysis: alcohol, by weight 12·54 per cent., by volume 15·49 per cent., equal to proof spirit 27·15 per cent.; extractives, 3·20 per cent.; mineral matter, 0·10 per cent.; volatile acidity reckoned as acetic acid, 0·08 per cent.; fixed acidity reckoned as tartaric acid, 0·55 per cent.; sugar, 1·61 per cent.; ethers reckoned as ethyl acetate, 0·036 per cent. This also was a good sound wine but somewhat inferior in quality to the previous sample. It is a little sweeter and contains rather more alcohol. The ethers again are distinctly lower in amount. The quantity of sugar is small, justifying the description of the wine as dry.

PREPARED PEA FLOUR.

(W. SYMINGTON AND CO., LIMITED, BOWDEN STEAM MILLS, MARKET HARBOROUGH.)

As is well known, the nutritive value of the pea or lentil is considerable owing chiefly to the rich proportion of proteid. Unfortunately the proteid contains sulphur which would appear to give rise to the production of sulphuretted hydrogen gas, which has a tendency to produce flatulence. By careful preparation, however, this indigestible quality may be very much modified. Messrs. Symington and Co. have prepared an excellent pea flour in which some of the sulphur, at any rate, is removed, while the constituents are reduced to an easily digestible form. On analysis we found that while the total sulphur was distinctly less in amount than is commonly found in ordinary pea flour the proteids showed an increase. Moreover, the process evidently increases the solubility of the flour, since 16 per cent. of it proved to be soluble in cold water. The method therefore adopted for the preparation of this pea flour may be approved as rendering this nutritious pulse more dietetically suitable.

New Inventions.

A NEW INHALER.

THE accompanying illustration represents an inhaler which we have received from Messrs. Maw, Son, and Sons of 7, Aldersgate-street, London, E.C. The indiarubber bag has several whalebone supports which prevent its complete collapse. This represents the chief advantage of this inhaler over the many similar patterns designed for the use of ethyl

chloride. We do not think that the sponge is anything but a disadvantage, because we believe that the simple method of introducing the ethyl chloride directly into the bag is better than any more complicated process. The whalebone slips undoubtedly are of use and they might well be adapted to the bags commonly used with most forms of ether inhaler.

POST-NASAL FORCEPS.

THE usual Loewenberg forceps and many of the modifications measure from 11 to 12 inches in a straight line from one extremity to the other. The examination of a few skulls and moist sections show that this is unnecessarily long. The instrument here represented only measures six and a quarter inches from tip to handle. With the patient's mouth wide open, as it must be in all cases requiring this instrument, this length is sufficient, even for full-grown adults, while the shortness and lightness of the forceps lend precision to all manipulations in the post-nasal space. The forceps are otherwise but a slight modification of the form known as Jurasz's.

They were designed some ten years ago and at first were employed in all cases of removal of naso-pharyngeal adenoids. Since adopting the curette this use of the forceps has been almost entirely abandoned. But the instrument is still, owing to its small bulk, better adapted than the smaller curette for removing adenoid growths from infants in whom the post-nasal space is both relatively and absolutely so remarkably small. In all adenoid operations it will also prove useful to have these forceps at hand for grasping any detached mass which may fall out of the caged curette or for removing any tags of growth found hanging after the operation. Apart from the adenoid operation, these forceps are frequently of service in removing polypi or cysts from the choanæ and in dealing with foreign bodies, necrosis, and new growths in the post-nasal space. As they serve as carriers of cotton wool or gauze they are convenient for making applications and dressings or for tamponing the cavity. They are made in one size only by several instrument makers.

Queen Anne-street, W. STCLAIR THOMSON, M.D. Lond.

Looking Back.

FROM

THE LANCET, *SATURDAY*, Sept. 8th, 1827.

FOREIGN DEPARTMENT.

*On the Mode in which the Sympathies between the Ear, and other Organs, are effected.**

DIFFERENT sounds produce pleasant or unpleasant sensations, and operate powerfully on the animal and vegetative functions. Very strong sounds, or sounds of a certain kind, produce very singular and striking effects in persons whose nervous system is easily excited. The celebrated Bayle always fell into convulsions on hearing the fall of water from a pipe (*Esprit des Journaux*, Nov. 1793); and Rousseau states, that he knew a woman who could hear no kind of music without being thrown into convulsive laughter. Tissot also relates the case of a person, in whom the sound of music brought on epilepsy. Sounds not only put the brain in activity, in consequence of their action on the auditory nerves, but they exert also an immediate influence on the auxiliary nerves of the ear derived from the fifth pair, by which different organs of the head are brought into sympathy. A violent sound sometimes causes a sudden and involuntary closure of the eyelids. Some persons complain of a peculiar sensation being produced in the teeth by the rubbing and cutting of glass, which is commonly called putting the teeth out of edge. These, and similar appearances, can only be explained by the communication between the chorda tympani, and the branches of the fifth pair. There are also other phenomena, which show that the organs of vegetative life are affected by certain sharp sounds, and which can only be explained by the connexion of the chorda tympani, with the branches of the glosso-pharyngeal nerve distributed to the tympanum, and of the sympathetic. Paullini* relates a case of a man who invariably vomited on hearing music; and Pechlin† makes mention of a person, in whom the mechanical irritation of the external ear caused vomiting. It is also well known, that persons of weak nerves sometimes become faint by the tunes of the harp; and there are several instances on record, of the respiratory and urinary organs being affected by a similar cause.

As the ear is connected with the sympathetic, it not unfrequently happens that in primary affections of the abdomen, this organ also suffers. This can only be explained,‡ by the connexion of the sympathetic nerve with the glosso-pharyngeal. Sand mentions§ the case of a person with an ulcer at the bottom of the stomach, who complained of a pain extending from the stomach to the left ear. Difficulty of hearing, and complete deafness, are sometimes produced by affections of the abdomen. To this cause belongs the periodical deafness which comes on with spasms of the abdomen and intermittent fever, and again disappears. Wardrop‖ mentions the case of a child labouring under intestinal worms, who became amaurotic, and nearly lost the power of hearing; the functions of both senses were restored after the expulsion of the worms. Sometimes, also, difficulty of hearing, and deafness, come on during pregnancy, and disappear after delivery.

* Tiedemann's and Treviranus's Zeitschrift fur Physiologie. Vol. II. Part I. p. 273.

* Observ. Medic. cent. 4. obs. 71.
† Obs. Physico-Medic. Lib. 2. Obs. 45.
‡ De Nervi Sympathetici Fabrica et Functionibus, p. 137.
§ Dissert. de raro ventriculi abscessu in Haller. Collect. Diss. Pathol. Vol. III. p. 128.
‖ Essays on the Morbid Anatomy of the Eye. Vol. II. p. 183.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 9, 1905.

The Presidential Address at the British Association

THE doctrine of natural selection, or survival of the fittest, is in most men's minds associated only with the speculations of DARWIN and WALLACE as to the origin of the various species of animals seen at the present time and with the evolution of the human race from some more lowly type, but it now seems that the same process is at work throughout the universe in inanimate as well as animate matter and that the theory is comparable in its range with the theories of gravitation and of the conservation of energy. The luminous and fascinating address delivered by Professor G. H. DARWIN before the British Association for the Advancement of Science at its recent meeting in South Africa shows how the process of elimination of weaker forms of matter is at work in the physical world, alike in the minutest particles and in the vast systems of suns and planets which have been discovered by the astronomer. The preparation of radium and the study of the remarkable properties which it exhibits, if they have not revolutionised scientific views as to the ultimate constitution of matter, have at least confirmed beyond possibility of doubt speculations to which other discoveries in the realm of physics had gradually led. We now know that the chemical atom, the smallest particle of matter which is capable of entering into combination with a similar particle of another substance, is not in reality an ultimate indivisible body, but that each atom is made up of many smaller corpuscles or electrons of infinite minuteness, held together by some unknown force and yet in all probability repelled one from another by a similar yet opposite force, as particles charged with like electricity are mutually repelled. Professor J. J. THOMSON has succeeded in calculating mathematically the behaviour of some 70 such particles charged with negative electricity contained within a sphere positively electrified—truly a triumph of deductive reasoning—and finds that many of the peculiarities of a chemical atom would be thus reproduced. Yet there are reasons for believing that the simplest element—hydrogen—consists of atoms containing about 800 corpuscles, while the heavier atoms contain many times this number. Such composite structures as these last are not indefinitely stable and in the course of time they break down spontaneously into simpler and more resistant elements. We have an actual example of this process in the case of radium which is constantly throwing off particles by disruption of its atoms, a more simple element remaining behind. In any given portion of radium this decomposition only takes place gradually, a certain percentage of the component atoms breaking down in a unit of time. The life of the element is thus not eternal but it may be very long. It is probable that a similar process takes place in all other substances, but so much more slowly that we are unable to recognise the change. If the life of radium be 1000 years that of other elements may be millions but they may yet not last for ever. The process of evolution or struggle for existence between non-living substances is a contest of stability, the unstable constantly breaking down into more stable forms better fitted to survive in the conditions under which they find themselves. Constant change, not permanence of matter, is the lesson of recent discoveries. It is curious to reflect how exactly we are thus brought back to the views propounded by the old Greek philosopher HERACLITUS who taught that all nature was in a constant state of change: nothing actually "existed" but everything was in a condition of "becoming." The atomic theory and the persistence of the more stable forms of atomic combinations while others were destroyed were also taught by a Greek thinker, DEMOCRITUS, and a poetical statement of his doctrines is to be found in the Latin poet LUCRETIUS, whose account may be read with interest at the present day as showing an extraordinary instance of successful guessing at truth when there were not enough facts known to render possible the construction of a really scientific hypothesis.

In the second portion of his address Professor DARWIN shows the applicability of the evolutionary theory to the infinitely great as well as to the infinitely little. Change to forms of greater stability has been the keynote of the development of the solar system of which our earth is a part and doubtless of those other systems which astronomy has made known to us. The nebular hypothesis supposes that originally the sun and its attendant planets existed in the form of a mass of gaseous matter revolving upon its own axis. The central portion of this gradually contracted and solidified, giving rise in the process of shrinking to the production of intense heat. Thus the sun was formed in the centre of the system. According to this hypothesis the planets were formed by the coalescence of rings of gaseous material which had been thrown off from the central mass as it shrank and solidified, owing to the centrifugal force generated by increased rapidity of revolution; but this explanation appears untenable, since a ring of material substance would tend to solidify around its centre of gravity in the sun, not round any point in its circumference. Another mode of the formation of satellites is set forth by Professor DARWIN, depending upon the behaviour of a rotating sphere of liquid, supposing that its velocity of rotation is constantly increased. The original sphere will first tend to assume an egg-shaped contour; next one end of the egg will enlarge and give rise to a projecting filament with a bulbous extremity; and finally the body will take the shape of two masses held together by a slender thread of matter. This will break and there will remain two separate masses, a smaller and a larger, the less revolving round the greater. This account seems to apply to the origin of the earth and its satellite the moon, for calculation shows that at one time the moon revolved at such a rate as to face always the same point of the earth's circumference, a fair proof that it was formed by breaking off from the larger body.

If we ask whether we have even now attained to a stable condition of things in our portion of the universe we are

again obliged to return a negative answer. From the point of view of animal life perhaps the most evident lack of permanence is seen in the gradual wasting of the sun's heat by continual radiation into space, although it is interesting to note that it is now held that the process of condensation already mentioned is not the sole source of this heat, radio-activity being credited with some of it—a change of view which has brought the physicists into agreement with the geologists by enabling the former to concede the possibility of a much greater age of the world than they could have admitted on the older hypothesis. But the relations existing between the earth and its own satellite are themselves undergoing slow change owing to the gradual retardation of the rate of rotation of the former. The earth's surface is largely composed of water and by the attraction of the moon this water is being constantly drawn up into a heap in a direction towards the satellite, this upheaving constituting the tides. As the earth revolves the tidal flow of the water constitutes a slight check upon its motion, friction occurring between the surface of the earth moving in one direction and the water being drawn in another. In itself this is but a comparatively minute force, but acting over a long period of time a small cause produces great results and this infinitesimal brake upon the wheel is gradually bringing the revolution of the earth to a standstill. Thus in great things as in small there is no such thing as permanence. "The old order changeth giving place to new" not only in human affairs but in the heaven above and the earth beneath, and the appearance of changelessness in the universe around us is only due to the minute length of human life compared with nature's cycle, just as a revolving wheel illuminated by an electric spark seems to our eyes to be stationary. To the "spectator of all time and existence" the universe would offer the spectacle of ceaseless mutation and living substance would be distinguished from other matter merely by the relative speed of its transformations.

The Rational Treatment of Mangled Limbs.

IN the first half of the nineteenth century the subject of the rational treatment of mangled limbs was much discussed, indeed, it may be said to have been thrashed out by LARREY, LISTON, GUTHRIE, HAMMICK, FERGUSSON, FAURE, and others, while in 1843 Dr. HENRY REID of Manchester obtained a gold medal at the University of Edinburgh for a thesis on this very subject. Then came PASTEUR and LISTER, since whose discoveries the surgery of disease has overshadowed the surgery of trauma, the modern surgeon paying less attention to fractures, dislocations, and sprains than did his great predecessors of the last century because his sphere of work has been so indefinitely increased. In another column will be found a letter from Mr. C. HAMILTON WHITEFORD of Plymouth which is an echo of an old controversy on the treatment of mangled limbs. The indications for amputation before the days of antiseptic doctrines were laid down as follows:—The rupture of the main vessels and nerves, the opening of a large joint, the compound comminution of a bone, the separation of very large areas of skin (especially if they took the form of a cuff and were turned down, as when limbs were caught in rollers), and, lastly, excessive fouling of the wound, especially with humid mould and earth. There was even in LISTON'S time a strong feeling against needless amputation, but the dangers to be combated were different in degree and conservative treatment had not the chances that it possesses in these days when antiseptic technique has been carried so far. Hæmorrhage, collapse, and fever, which we now know to mean septic infection, were recognised as the essential risks against which provision had to be made. All were agreed that the hæmorrhage must be arrested at once by the rapid application of forceps or ligatures or by tight bandaging over a compress. It was generally accepted that to amputate during collapse would almost certainly prove fatal. Sir WILLIAM FERGUSSON said in 1857: "It is a maxim almost invariably applicable never to amputate whilst the patient is in a state of shock," but as Mr. JONATHAN HUTCHINSON, sen., urged about the same date the sooner the amputation is done when the shock is combated the better the results. The surgeons of 50 years ago recognised the terrible mortality which followed "intermediary" amputations of mangled limbs—i.e., amputations after the expiration of 24 hours from the receipt of the injury—although they did not explain it. Now we know that immediately after the accident the infection of tissues is strictly local and that an amputation performed then will be through aseptic tissues, but that in 24 hours' time the micro-organisms have spread by multiplication to the deepest recesses of the wound. The lymphatics of the limb above are full of them and an amputation performed then passes through virulently infected tissues and permits the most rapid absorption from the raw muscular surfaces of the flaps. The older surgeons knew that if the patient survived the acute stage of suppuration and amputation were performed some weeks later, when sepsis had become chronic and hectic had commenced, the results were relatively very favourable, although the theories of acquired immunity had not been formulated.

The treatment of mangled limbs has been greatly improved by the application of antiseptic methods and is generally agreed to be as follows, the essential risks being still hæmorrhage, collapse, and septic infection:—The clothing should be rapidly cut away and removed. The hæmorrhage if active must be arrested at once. All but large arteries can readily be controlled by an antiseptic compress when a tight bandage should be locally applied. Tourniquets should be avoided; at any rate they should never be applied for more than an hour, and even in that time they will seriously interfere with the vitality of the future flaps. The shock must then engage the medical man's attention. Morphine may be injected at once and with no stinted hand. A third of a grain combined with a thirtieth of a grain of strychnine for an adult is a usual dose, followed by a sixth of the former and a sixtieth of the latter every hour until sleep is induced. It is not only pain which is thus relieved, but anxiety and vascular failure, for the pulse rapidly improves and becomes even and full and the extremities grow warm whilst the restlessness subsides. The patient is sure to be in urgent need of fluid if he is conscious, when his thirst may be met by moderate quantities of water or weak tea frequently repeated. It is well to avoid the administration of an anæsthetic at this stage because of the

risks of subsequent vomiting and further heart failure. If the loss of blood has been very great and the collapse profound, intravenous transfusion of saline solution may be unavoidable. The patient should be wrapped in blankets or rugs and, if they can be obtained, surrounded with hot-water bottles or hot bricks. In an hour or so when narcosis is complete the limb may be uncovered, cleansed, and fixed upon some apparatus for transportation. The medical man on the spot can do more than any other subsequently to benefit the case. On no subsequent occasion can so much be done to prevent extensive septic infection. A free use of hot water, soap, and a razor will remove many of the sources of infection before they have had time to multiply or to be absorbed. Hopelessly soiled and torn tissues may be cut away without pain to the patient and a firm antiseptic compress may be applied over the entire wound. Splints or improvised supports should then be applied, one of the best of these being a voluminous pillow tied around the limb by strips of bandage. Such is the routine treatment of a patient with a badly mangled limb to whom the surgeon has to render first aid. In spite of the obvious simplicity of the teaching we have thought it well to give the details, as it is certain that some practitioners are a little too willing to listen to the suggestions of friends, bystanders, or witnesses of the accident and to have the patient transported at once to a hospital. This course is bad for the medical profession, as it leaves the impression that only at the hospital can serious cases be treated, and it is bad for the patient, as the earlier the measures preventive against sepsis can be taken the better chance he runs.

The patient is now ready to be removed to some convenient spot where the question of amputation can be discussed and, should it prove necessary, the operation performed. He should be conveyed in the recumbent position and with as little jarring as possible while the various provisions against shock must be continued during the journey. Many such cases arrive at hospitals several hours after the accident when it is found that nothing has been done except partially to arrest the hæmorrhage. This is, as a rule, the result of the impatience of the relatives to get the patient to a hospital. The operating surgeon is then on the horns of a dilemma should he have to decide that amputation is necessary. If he gives an anæsthetic, cleanses the wound, and amputates at once the patient will die from shock. If he waits completely to combat the collapse until 12 or 18 hours after the accident sepsis will have spread far and wide through the tissues and the patient will die from acute sapræmia or septicæmia. As a rule, if amputation is unavoidable he strikes a mean and removes the limb after some two or three hours have been devoted to relieving the shock. Should a bad result follow it is rather to be attributed to the failure of the early treatment than to any irrational desire to remove a limb. It will be seen that in many matters we agree with Mr. WHITEFORD'S views as expressed in his letter but we cannot help thinking that his experience has been unfortunate. In all the hospitals with which we are acquainted the surgeons are fully alive to FERGUSSON'S dictum that no amputation should be performed during the stage of shock, and Mr. WHITEFORD does not seem to have appreciated the increasing danger of amputating mangled limbs after the twelfth hour. When such a limb must be removed it should be done at the earliest possible moment after the shock is combated.

Research in Medicine.

Dr. A. E. WRIGHT, formerly Professor of Pathology at the Army Medical School at Netley and now pathologist to St. Mary's Hospital, has thrown himself with characteristic energy into the work of endeavouring to persuade the public that the endowment of medical research is the most pressing necessity of the time in which we live. An article entitled "The World's Greatest Problem" appears under his name in the *Liverpool Daily Post* of August 30th, and in this he dwells at some length upon the vast importance to the community of the problems presented by disease, upon the insufficiency of medical knowledge with regard to them, and upon the legitimacy of the demand upon rich people that they should give of their abundance in order that this insufficiency may be remedied. "*Qu'allait-il faire dans cette galère?*" is a question which the spectacle of a professor of pathology contributing to a provincial daily paper causes to spring unbidden to the mind; but we understand that Dr. WRIGHT has consented to formulate his opinions for the use of an organisation of gentlemen interested in public health and that the manner in which the results shall be employed has been left in their hands. If this be so, these results will probably be given to the public through various channels and, it may be, in slightly differing forms, but we may clearly take the article to which we refer as a deliberate pronouncement upon points of great public importance. Dr. WRIGHT is a pessimist of the most pronounced type. He declares the prevailing belief "that the medical art of to-day can effectually intervene in the course of disease" to be an illusion and one which ought to be dispelled. He tells us that the "thoughtful and conscientious physician" when confronted with an acute bacterial invasion does not conceal either from himself or others that he is "quite in the dark" and that he can neither foresee nor determine the issue of the conflict. Fully conscious of the limits of his knowledge, and conscious also of the risks of ignorant intervention, the thoughtful physician aforesaid dismisses from his mind all idea of positive treatment. He contents himself with laying aside the drugs which he feels to be useless and with looking after the feeding of his patient. From this sweeping statement Dr. WRIGHT excepts only "one or two infective diseases which can to some extent be controlled by remedies placed in our hands by chance" (we presume the intermittent fever group) and the case of diphtheria, "a disease for which an effective remedy has been furnished by medical research." As regards others, it may be affirmed with confidence, Dr. WRIGHT believes, that the medical art, as at present practised, can do nothing to avert death from a virulent bacterial invasion or to bring about a cure.

Proceeding from the premisses above laid down, and having previously asserted that "of all the evils which befall man in his civilised state, the evil of disease is incomparably

the greatest," Dr. WRIGHT goes on to explain, lucidly and accurately, circumstances which appear to him to stand in the way of active prosecution of inquiries by which the dark places of medicine might be illuminated. He points out that hospital physicians, being unpaid, cannot spare the necessary time for unremunerative laboratory work, and he attributes to economic reasons the "fact"—he states the debateable point as a fact—that we are not making any effort worthy of the name to solve the problems of disease. We have not in England any appreciable number of workers engaged upon the task of medical research. The economic reasons for this are that a young man who proposes to take up medical research as his lifework finds himself immediately confronted in his own person with the fundamental and primitive problems of obtaining subsistence, and clothes, and a shelter over his head. Even if appointed to one of the research scholarships which have been recently founded for the purpose of launching the student upon a career of research, the problem will only be staved off a little. Dr. WRIGHT wishes it to be known universally that "the scientific knowledge which alone can avail in the conflict with disease is—practically all of it—still to seek," and that the first duty of all members of the community is to do something towards rendering the research successful, "towards making provision against the day when they themselves, and those near and dear to them, will be in the grip of disease." Especially does he address himself to those careless rich who nurture the comfortable faith that when they are ill Dr. A, or B, or C, whom they know, or failing him, Dr. X, or Y, or Z, in London, or Paris, or Berlin, will be able to cure their diseases; and he tells them that when their dark hour arrives the wealth in which they trust will be impotent to purchase for them any effectual scientific aid. Now, he assures them, is the accepted time at which it is the duty of every far-seeing man to reflect upon the problem as to how the proper kind of workers can be enlisted for the purpose of medical research, and how the proper training and skilled direction can be provided for the workers. Until, he concludes, the "economic conditions shall have been so altered as to attract to the work of research a proportion of the best ability of every country the task of providing for that scientific skilled direction of medical research will be the really difficult problem."

We have been very desirous to do no injustice to Dr. WRIGHT'S position or arguments and have therefore, to a considerable extent, stated them in his own words, but we do not find his opinion of the position sound or his arguments free from fallacy. It is obvious, too obvious to be worth saying, that much of the recently acquired knowledge as to the production of disease by invading organisms is in its infancy. There open out from what we have learned many fields of inquiry which must be diligently traversed before the full value and the complete application even of what is now known will be in our possession. In the case of a large number of invading organisms, we do not at present know any means of destroying them without injury to the person whom they have invaded; but, admitting this to the fullest extent, we believe that we shall carry with us the assent of every experienced clinical physician when we affirm the power of judicious treatment, even of drug treatment, to control or modify many of the results of what Dr. WRIGHT calls the conflict. A phrase familiar to our forefathers, the phrase "to obviate the tendency to death" is one that has by no means lost its significance, and the means of accomplishing what it suggests are manifold. The employment of these means may often be far more scientific, in the proper sense, than would be the administration of the antidotes which are what Dr. WRIGHT apparently seeks from science. We regret, in common with all reasonable people, that scientific research should be hampered by the fact of its immediate pecuniary unproductiveness, and we should gladly welcome any funds or endowments by which the difficulties hence arising might be even partially overcome. We are, nevertheless, entirely sceptical as to the possibility of developing a capacity for research by any means of such transparent simplicity as the mere provision of stipends for the workers. The work, to be conducted successfully, requires the guidance of mental capacity of a high order, and this is not to be secured either by a laboratory training or by a certain if modest income. When Nature endows the world with a PASTEUR or a FARADAY there soon ceases to be any doubt concerning either the character or the value of her gift. America knows well that when ambitious mediocrity is placed in the chair we get a type of professor in whose person loquacity not always inspired by accuracy is made to represent the latest achievements of scientific labour. Hypothesis is piled upon hypothesis, Ossa upon Pelion, and still we are not perceptibly nearer to the clouds. We shall be content for the medical profession with that moderate rate of secure progress with which the last few years have rendered us familiar, a progress marked, on the one hand, by antiseptic surgery and by its effects, on the other, as Dr. WRIGHT admits, by a remedy for one frequently fatal disease and by much increase of knowledge concerning the causation of others. We should be the last persons to undervalue research, especially when conducted by men gifted with the necessary caution, imagination, and absolute fidelity to truth as distinguished from hopes and from conjectures, but we should expect little from a medicine of antidotes which led to any under-valuation of clinical study or from any attempt to confuse and blend together the altogether dissimilar duties of a student of natural philosophy and of a medical practitioner. The former may sleep upon his doubts and may repeat and vary his experiments; the latter must act for the best in the particular emergency which is before him.

Annotations.

"Ne quid nimis."

THE CARE OF THE SICK AND WOUNDED IN THE BOER WAR.

THE strain placed upon the Royal Army Medical Corps during the South African war revealed the weak points in our army medical organisation and plainly demonstrated the inadequacy of our existing establishment. That the officers of the corps did excellent work was allowed by all, while the breakdowns that occurred were due mainly to

under-manning and to difficulties of transport, but at the end of the war it was recognised that reforms of a thorough nature would have to be introduced in order to place the army medical organisation upon a satisfactory footing. Accordingly, a Royal Commission was appointed to consider and to report upon the care and treatment of the sick and wounded during the South African war, and to recommend measures calculated to prevent the recurrence of such loss of life and sickness as marked that campaign whether caused by the lack of medical aid or the absence of sanitary organisation. The report of the Commissioners was published in our columns at the time of issue and the recommendations will be found in THE LANCET, March 9th, 1901, p. 734. An abstract of these recommendations has been issued recently, together with the action taken thereupon. In accordance with the recommendation of the Commission a reorganisation committee, of which the Secretary of State for War was chairman, was appointed and dealt with the organisation of the Army Medical Service generally and delegated to an advisory board the consideration of certain points. Some of the subjects have since been fully considered by this board while some are under the consideration of the Army Council. The result, so far as action has been taken upon the recommendations of the Commission, is as follows. The establishment of medical officers has since the war been increased by 125 and the establishment of quartermasters, warrant officers, non-commissioned officers, and men, including provision for South Africa, by 1216, and the question of further increases in both categories is still under consideration. The equipment provided by the Mowatt reserves for three Army Corps, one Cavalry Division, and Line of Communication Troops has been completed and is being revised. By a Royal Warrant issued on March 26th, 1902, the pay of medical officers has been greatly improved. A college for the instruction of officers has been opened in London and a permanent building is now in course of erection at Millbank. All officers of over five years' service are required to attend a six months' course of instruction, which includes clinical teaching in the various civil hospitals in London by civilian professors. Officers passing certain standards at the examination after the course are eligible for accelerated promotion up to a period of 18 months, and officers who distinguish themselves in selected subjects are eligible for employment as specialists with extra pay. Promotion to the higher ranks is now made upon a system of strict selection based upon positive merit. It is stated that as a result of these regulations the supply of candidates has been of the most satisfactory nature. A Royal Warrant was issued in March, 1902, approving of the establishment of Queen Alexandra's Imperial Military Nursing Service. This warrant is believed to have greatly improved the conditions of service of nurses and is attracting highly qualified nurses. An increase of 259 nurses has been made to the peace establishment and this number is being recruited so that the needs of all important military hospitals will be met. The scale of nurses for fixed hospitals in war has been largely augmented. The appointment of properly qualified Sanitary Officers to all commands at home and abroad has been approved, and already, in all home commands and the important commands abroad, these Officers have been appointed. To insure a satisfactory ambulance wagon being provided a prize was offered and many firms competed. It is stated that after exhaustive trials of many patterns wagons of a thoroughly satisfactory character have now been selected. A special tent (a modification of the Indian pattern E.P. tent) has been designed and made and has undergone successful trials. The provision of further reserves of officers and orderlies is still under consideration. A scheme has been drawn up for the establishment of a reserve of civilian surgeons who will receive military training. A scheme of special enlistment to provide a sufficient reserve of trained orderlies is also under consideration. From all of which it will be gathered that much has been already accomplished in the direction of reorganising our army medical department. As to the working of these reforms some time must yet elapse ere criticism can be passed that will be quite just. As each reform has been announced, we have noticed it and welcomed it; and now that an official summary of the actions taken on the recommendations of the Royal Commission has appeared all will regard what has been done as an earnest of good intentions. It is sincerely to be hoped that our Army Medical Service may take rank in efficiency with the medical departments of any army in the world. The appointment of properly qualified Sanitary Officers to all commands at home and abroad is a departure which is especially to be commended. The need and value of such Officers have been emphasised in the most marked manner in all recent wars.

THE DECAY OF THE LAW OF CUSTOM.

THE progressive penetration of the white race into regions of the earth which are inhabited by coloured races may be said to have culminated in the recent expedition to Lhassa, which probably marks the beginning of a sapping process destined ultimately to lead to the fall of the last citadel of immemorial custom and prejudice. Under the title of the Decay of the Law of Custom an interesting address was recently delivered at the forty-fourth annual meeting of the Devonshire Association by the President, Mr. Basil H. Thomson, Governor of the Dartmoor Convict Prison. The laws of custom which have governed the coloured races for countless generations are, it is pointed out, gradually breaking down, though it is estimated that some 800,000,000 of the 1,500,000,000 constituting the population of the globe are still comparatively uncivilised and stagnant under the influence of these laws. The ever increasing facilities of intercommunication must make steadily for a greater uniformity of view and conduct amongst the different races of mankind and for the white race the question is of the first importance as to what part the coloured races will come to play in the affairs of the world when they shall have assimilated the teachings of Western civilisation. With this is bound up the question of the relative mental capacity of the white and coloured peoples. It would be rash to assert that any race is inferior in mental endowment to, and inherently incapable of reaching the mental level of, another, though plenty of white men are to be found who, after years of residence in Africa or the East, speak confidently of the general mental inferiority of the coloured races. Even in instances in which it is manifest that no such inferiority exists there is, they say, and always will be a profound difference between coloured and white races in the manner of viewing things. This is to maintain that a man's attitude of mind is as innate and as little liable to alteration as is the colour of his skin. We prefer to take the view that the differences between white and coloured races are in the main matters of custom and tradition and as such are subject to the influences of the agents of civilisation, such as steam and electricity, which have already done so much towards obliterating lines of demarcation between nationalities and towards establishing uniformity in manners and customs. That this is Mr. Basil Thomson's view may be seen from the following words of the address referred to:—"In tropical countries the line of caste would soon cease to be the colour of the skin. There, as in temperate zones, wealth would create a new aristocracy recruited from men of every shade of colour. In the great cities of Europe and America we might find men of Hindu, Chinese, and Arab origin controlling industries with their wealth just as Europeans now controlled the commerce of India and China, but with this difference, that they would

wear the dress and speak the language which would gradually have become common to the whole commercial world. ..... Just as the aristocracy of every land would be composed of every shade of colour so would the masses of men who work with their hands. ..... White men would work cheek by jowl with black and feel no degradation. There would be the same feverish pursuit of wealth but all races would participate in it instead of a favoured few."

CHILDREN'S LIVES AND FLANNELETTE.

AT the risk of its being considered vain repetition, attention should be called from time to time to the numerous lives of children sacrificed to flannelette. This sacrifice is offered more frequently among the poor than among those able to obtain helpers, for the mother who is single-handed cannot keep so close a watch on the children as her more fortunate sisters can arrange for. The coroner for Warrington, Mr. S. Brighouse, has held several inquests on these cases; one of the last was held on August 15th. The story seldom varies much. Here the little girl of eight years was left in the kitchen in her flannelette nightgown while the mother put the baby to bed. The child was reaching a roasted apple from the grate and her nightgown caught fire. She ran screaming into the yard and though the mother put out the flames the child died soon afterwards. The coroner said that "if parents wanted to lose their children a very easy way was to put them in flannelette and leave the kitchen fire without a guard." As some forms of this material are so inflammable and as it can, so it is stated, be readily rendered so little inflammable as to be a practically safe material, it is much to be desired that this fire-proofing process should be made compulsory.

CONGENITAL WORD BLINDNESS.

To the *Ophthalmoscope* for August Dr. C. J. Thomas has contributed an important paper on congenital word blindness—a condition to which attention has been directed by ophthalmic surgeons only in recent years but which appears to be far from uncommon. Since the London County Council issued an instruction to head teachers to submit to the medical officer every child of the age of seven years who appears very backward or defective a great number of cases of word blindness have been brought to light. Dr. Thomas calculates that nearly 1 in 2000 of London elementary school children has word blindness to a considerable degree. It seems to be most frequent in the lower classes and, like the allied conditions of idioglossia, amusia, and congenital word deafness, frequently assumes a family type. It occurs much more often in boys than in girls. The following is an example. A boy, aged seven years, was admitted to a special class in 1901. He was clever in all handiwork and had good powers of observation and reasoning but could not remember how to make the letters. In 1904 he was bright and intelligent and could do difficult sums in mental arithmetic but all attempts to teach him to read had failed. But he could read Arabic numerals and do sums in multiplication. He said that the written word "not" stood for "one"; "buds" he read as "branch"; and "horse" he could not read (he mistook "r" for "b"). But he recognised all these words when spelt aloud. His desire to read was painful, for he was more than ordinarily ambitious. In 1905 he could with difficulty make out a few words of three letters, which he did by tracing them out with his finger, thus utilising a form of kinæsthetic memory. In less serious or partial cases if the child is intelligent other centres in the brain may be used as a help and the child may pass muster but not become a fluent reader. Dr. Thomas refers to a case in which the child was of brilliant capacity and became an excellent surgeon. He practically did no reading but acquired all his knowledge at lectures and classes. The treatment consists in placing the child in a special class in which he can receive individual attention. The initial difficulty in learning the letters is due to the fact that the 26 signs are too numerous to be learnt and retained unless used in word-building. On the other hand, as Dr. James Hinshelwood has pointed out, the recognition of Arabic numerals is readily acquired. Letters should be taught from large signs and the child should be encouraged to copy them. The ordinary individual recognises words as a whole without troubling to recognise individually the letters of which they are composed. His visual word centre is therefore stored with memories of words. Dr. Thomas recommends for word-blind children the phonic method of teaching elaborated by Miss Dale of the High School, Wimbledon, which ignores in the early stage visual word images. In this the child associates from the beginning the form of each letter with the mechanism for producing the most usual sound for which it stands. Thus each word is pronounced without calling upon the visual word centre at all and its meaning is arrived at from speech and auditory memories. Miss Dale has devised a series of reading books in which only regularly phonetic words are met until the child is considerably advanced. Then other memories may be invoked.

THE CHOLERA.

THE following notice has been sent out by the Local Government Board for Scotland to the clerks to the various local authorities:—

SIR,—I am directed by the Local Government Board to state that cases of cholera have recently occurred in certain places on the shores of the Baltic Sea. Cholera was present in several localities in Eastern Europe in 1904, and it has since spread through Russia and has reached the Baltic by way of the River Vistula in the persons of raftsmen descending that river.

The cases which up to the present have occurred in East and West Prussia are therefore regarded as imported cases and no definite outbreak of the disease has been reported from any quarter of Western Europe. Under the circumstances mentioned, however, the ports of the Baltic and perhaps some of those of the North Sea must be looked upon as threatened with the disease, and the authorities of British ports trading with Baltic and North Sea ports should therefore be on their guard against the importation of cholera into their districts by means of vessels coming from such ports.

In the event of any port of the Baltic or North Sea being declared definitely infected with cholera it will be the duty of the local authority to take, with regard to vessels arriving from that port, the action prescribed by the Board's Cholera Order of the 1st January, 1898.

I am, Sir, your obedient servant,
G. FALCONAR-STEWART, Secretary.

The Clerk to the Local Authority.

It is an enormous tribute to the efficacy of the sanitary arrangements of the sea-ports of Great Britain that the approach of epidemic diseases from abroad, in spite of our commercial communications with all parts of the world, has no terrors for the community.

THE TREATMENT OF LEUKÆMIA BY THE X RAYS.

RECENTLY several cases have been reported in foreign journals of great improvement produced in leukæmia by the use of the x rays but the final results cannot yet be stated and therefore the value of the treatment remains to be appraised. In the July number of *Clinical Studies* Dr. Byrom Bramwell has reported two cases which are an important contribution to the subject. In one the patient was a boy, aged 15 years, suffering from lymphatic leukæmia. The mucous membranes were markedly pale and there were extravasations of blood around the eyes. The lymphatic glands were much enlarged and the spleen filled the left side of the abdomen. The red corpuscles numbered 2,000,000 and the white 340,000 per cubic millimetre and the hæmoglobin amounted to 38 per cent. A differential count gave small lymphocytes, 69·2 per cent.; large lymphocytes, 23·8 per cent.; polymorphonuclears, 4·6 per cent.; and myelocytes, 2·4 per cent. There were double optic neuritis and retinal hæmorrhages. In the second case the patient was a woman, aged 28 years, who was suffering from spleno-medullary

leukæmia. She was not markedly anæmic; the spleen extended two and a half inches to the right of the umbilicus and almost into the pelvis. The lymphatic glands were not enlarged and the fundi were normal. The red corpuscles numbered 3,800,000, and the white 540,000 per cubic millimetre, and the hæmoglobin amounted to 69 per cent. A differential count gave myelocytes, 43·2 per cent.; polymorphonuclears, 41·4 per cent.; lymphocytes, 4·4 per cent.; eosinophile myelocytes, 5·8 per cent.; eosinophile polymorphonuclears, 2 per cent.; and basophiles, 3·2 per cent. Both patients were treated by the application of the x rays over the spleen for five minutes, at first every other day and then every day. In both cases the temperature rose and assumed a swinging type. In the boy's case the treatment was commenced on Feb. 27th, 1905, when the red corpuscles numbered 1,600,000 and the white 230,000 per cubic millimetre and the hæmoglobin amounted to 33 per cent. On March 15th the white corpuscles had fallen to 7000, the spleen had considerably diminished, and the lymphatic glands were smaller and softer. But the red corpuscles did not increase in number and the general condition did not improve. On March 23rd the treatment had to be discontinued because of an erythematous inflammation produced over the enlarged spleen. Hæmorrhages from the gums and the nose occurred. On April 7th the red corpuscles had fallen to 660,000 per cubic millimetre and the hæmoglobin to 20 per cent.; the white corpuscles numbered 26,000 per cubic millimetre. Death occurred on April 15th. The result shows that in lymphatic leukæmia diminution in the size of the spleen and lymphatic glands and in the number of leucocytes is of no value if the red corpuscles and the amount of hæmoglobin do not increase. In the woman's case treatment was commenced on Feb. 28th. The white corpuscles steadily decreased and on June 7th had fallen to 12,000, the spleen much diminished, and the red corpuscles and hæmoglobin increased. On June 7th the patient menstruated for the first time for 11 months. Of the benefit derived from the x ray treatment there could be no doubt. It should be mentioned that both patients were given arsenic. These results are in accord with previous observations that the x ray treatment is more frequently beneficial in spleno-medullary than in lymphatic leukæmia. In some cases the rays were applied over the bones, in the marrow of which the lesion is supposed to be situated in the spleno-medullary form. It should be borne in mind that the use of the x rays is not without danger. An American writer, Dr. Dock, states that in some cases death has occurred during, and possibly as a result of, the treatment.

MEDICAL PRACTICE IN PERSIA.

THE unwillingness of Asiatics to adopt the habits and customs of European nations affects their appreciation of medical practice as conducted by the foreigners who come among them. In no countries are innovations imported from abroad welcomed on their first introduction and in the East it is generally found necessary to make some concession to local prejudices, though in important medical questions such compromises are nearly impossible. In Persia, where medical practitioners, male and female, have for years been labouring on behalf of the Church Missionary Society and other Christian agencies, it is said that native opinion is on the side of the native practitioners as regards purely medical treatment, but the superiority of the foreign surgeons over the hakims is admitted. Persian surgery unquestionably has its weak points. Violent taxis is the rule in hernia; in cases of cataract eyes are frequently spoiled by dislocation of the lens backwards; trichiasis is sometimes improved by the unsightly method of causing sloughing of part of the offending lid—usually by ligature. A great field is therefore open for European philanthropy in Persia where the agents of the Church Missionary Society have two hospitals—one with 48 beds in Julfa, the Armenian suburb of the old capital Ispahan, and one with 21 beds in Kerman, the chief town of the large province bearing the same name. In the hospital at Julfa in 1904 there were 1079 in-patients admitted (202 medical and 877 surgical cases), 547 major and 1138 minor operations were performed, and 11,790 new out-patients were treated. In the hospital at Kerman during the same period 217 in-patients were admitted, 211 major operations were performed, and 4276 new out-patients were treated.

LUNACY IN EGYPT.

THE lunacy problem in Egypt seems to be assuming a degree of importance which demands the attention of the Egyptian Government. In the ninth annual report of the Egyptian Government Hospital for the Insane, Cairo, for the year 1903, the medical director, Dr. John Warnock, states that "during the year 1903 the 500 beds of the hospital have accommodated over 1000 patients, of whom more than 500 were admitted during the year." The rate of lunacy continues to increase and "the number of admissions would have been much greater if steps had not been taken to prevent the reception of any but dangerous or unmanageable lunatics." With the present limited accommodation and the increasing pressure of new cases demanding admission certain patients of the asylum have from time to time to be discharged prematurely, with the result that recovery is not completed in their own homes and many of them "return after a varying interval ill-treated, excited, and unmanageable, often also suffering from injuries." The problem of dealing with the increasing lunacy seems to be both difficult and serious. With the object of reducing the number of admissions, says Dr. Warnock, Government medical officers are instructed only to certify cases which they consider to be dangerous; the result of this limitation has been that several cases which medical officers have declined to certify have been taken to the asylum as criminal lunatics later owing to their having committed some criminal offence. A recent modification of the instructions has been made which it is hoped will prevent such occurrences. The discharge of dangerous lunatics who had partially recovered having resulted in acts of murder or of attempted murder by some of them while at large or while in the care of relatives, such cases are now retained longer in the asylum, with the result that in a few months the asylum population has risen to 100 more than the buildings should hold and overcrowding exists. 67 alleged criminal lunatics were examined during the year and 59 were admitted. "The number of these cases shows a large increase on past years. 16 of them had formerly been inmates here and most of them had been discharged for want of accommodation." The construction of an annexe at Abbasia to accommodate patients of this class is proposed by Dr. Warnock as a satisfactory arrangement helping to meet the requirements of criminal lunacy in Egypt. It is also advised that the existing asylum buildings and grounds at Cairo should be extended and a criminal annexe built, "as the present distribution of the criminal lunatics is most unsatisfactory, half of them being here [at Cairo Asylum] and the rest at Tourah, where they are too distant to allow of our constant observation of them." The extensions proposed would suffice to accommodate 140 male criminal patients, 205 ordinary male patients, and 50 female patients. While the existing asylum with its extensions would continue sufficient to provide for Upper Egypt and Cairo, Dr. Warnock is of opinion that a new asylum should be provided without delay for cases occurring in the Lower Egypt provinces and towns. A convenient site for it might be found, he says, near Alexandria, where cases from all parts could be easily brough

by rail. "The more northerly the site the cooler the summer climate and the more suitable for the treatment of lunatics, when the heat causes much excitement and irritability." The buildings at the Cairo Asylum have been better supplied with water during the year, a high-pressure tank in the tower being kept constantly full, while the means of protection against fire have been improved. The drainage and sewerage systems have also been rendered more efficient. The daily average number of patients resident during the year 1904 was 512. The admissions during the year amounted to 495, comprising 383 males and 112 females, showing a slight decrease from the year 1903. The cost of maintenance has been high during the year owing to an increase in the price of meat, milk, and provisions. The institution is under the charge of Dr. Warnock, and a deputy superintendent, assisted by three native Egyptian medical men. Mechanical restraint is practically never used, though seclusion has to be employed daily (on an average of six cases). Of the forms of insanity in the admissions 40 per cent. were maniacal or depressive cases, 7 per cent. were cases of general paralysis, 10 per cent. of pellagrous insanity, 18 per cent. of hasheesh insanity (maniacal, delirious, depressive, acute toxic, and demented forms), and the rest were of other forms. Of the causes of insanity in the admissions, hasheesh accounts for 74 out of 495 cases, pellagra for 52 cases, syphilis for 23, worry and poverty for 23, senile decay for 17, congenital mental defect for 14, alcohol for 12, epilepsy for 12, and other causes for the rest. The deaths during the year amounted to 79—viz., 60 males and 19 females. Of the deaths, seven were due to senile decay, eight to pulmonary and other forms of tuberculosis, ten to pellagra, 18 to general paralysis of the insane, and the rest to other causes. Half of the tuberculous deaths were of patients who were already suffering from the disease on admission. During the present year a villa for the reception of 12 male patients of the private class will be completed.

GEORGE CRABBE, DOCTOR, POET, AND PARSON.

FEW persons nowadays read the poems of the Rev. George Crabbe and of those who do, most probably derive their first knowledge of them through the medium of the delightful "Rejected Address," commencing—

> "'Tis sweet to see from half-past five to six
> Our long wax candles with short cotton wicks,
> Touched by the lamplighter's Promethean art,
> Start into light and make the lighter start."

Fewer persons still know that Crabbe was originally brought up to be a medical man, being in 1768 bound apprentice to a village practitioner a few miles from Bury St. Edmunds, by whom he was at first employed as errand boy and labourer on the land, this being the usual way to treat the medical apprentice in the country 130 years ago. About 1774 Crabbe's father sent him to London to pick up a little surgical knowledge. He then returned to Aldeburgh, the little seaside Suffolk town where he was born, and became assistant to a surgeon, afterwards setting up in practice for himself. The practice, however, was not very successful and Crabbe came to London to try his hand at literature. Here the success of the "Library," the whole profits of which were generously given to the author by his publisher, brought him fame. He then took holy orders, being ordained in 1781. He was at first assistant curate at Aldeburgh and afterwards held various small livings in different parts of England. Like many another parish clergyman, he gave medical advice to the poor of his parish, being justified, as many of them are not, in that he had had a medical training. We are led to these remarks by having received a notification of a celebration to be held at Aldeburgh from Sept. 16th to 18th in commemoration of the 150th anniversary of Crabbe's birth. The items of the celebration include a reception by the Mayor of Aldeburgh, a visit to the parish church, in which will be shown the vestry books proving that Crabbe acted as parish medical officer in 1775, and besides these there will be an exhibition at the Moot Hall of relics connected with Crabbe, such as manuscripts, pictures, and engravings. Papers will be read during the meeting, among them being one by M. Huchon, professor at the University of Nancy, on "Crabbe's Aldeburgh," and another by Mr. Clement Shorter on "Crabbe's Place in English Literature." Visits will also be paid to places in the neighbourhood where Crabbe executed various clerical duties.

THE PREVALENCE OF EPIDEMIC PARALYSIS IN SWEDEN.

IN its issue of August 22nd the Stockholm *Svenska Dagbladet* states that about a month previously an epidemic nervous disorder appeared in certain parishes of the district of Skaraborg and that Dr. Ernest Levin was sent by the medical board to Vestergötland for the purpose of making inquiries as to its nature and origin. The first case was observed on July 10th in the parish of Trästena. During the nine succeeding days 13 new cases were announced at Trästena and Hjälta and during the next ten days 17 fresh cases. The disease had then attacked in almost equal numbers all ages from one year to nine years. After July 30th it seemed as if the epidemic were decreasing, but in the meanwhile it appeared in Mariestad where 12 cases occurred up to August 1st, after which it seemed as if the epidemic had ceased also in the last-named place. Unfortunately, however, it was soon evident that the disease was not confined to Vestergötland, for it appeared in other parts of Sweden widely remote from each other. The first report of it from Hernösand came on August 9th. The medical officer at the hospital there had on the same day no less than three cases of acute poliomyelitis, two of them from the same parish, Ullanger, and three weeks previously a patient had died after being ill for only three days. Almost at the same time a report was received from a medical man in Valdemarsvik that some remarkable cases of sickness had happened amongst children in the district. The first symptoms were said to be feverishness followed by slight paralysis and there was therefore a danger that in the present circumstances the disease would be diagnosed as acute infantile paralysis. The medical board ordered that the schools should be closed where necessary and that all precautions usual during the prevalence of an epidemic should be observed. At the same time the medical board informed the provincial governments of Ostergötland and Vesternorrland that if it were necessary to send additional practitioners to the infected districts their expenses would be paid by the State, just as in the case of dangerous epidemics. Two days after the announcement of the epidemic in Valdemarsvik and Hernösand a newspaper in Smaland stated that an infectious disease of children had been prevailing for several weeks in the district of Kronoberg, although its existence had only just come to the knowledge of the local practitioners. The symptoms were violent headache, high fever, relaxation of the muscular system, and spasmodic twitchings. It attacked children of all ages and even adults up to the age of 27 years, the latter being apparently more severely affected than the younger sufferers. In some cases death had ensued after only a couple of days. Dr. Levin informed a representative of the *Svenska Dagbladet* that the disease differed in many respects from acute infantile paralysis. As a rule it did not attack very young children but was more prevalent among adolescents, the upper limit of age being 20 or 21 years. It was often fatal and in such cases the course was so rapid

TO ILLUSTRATE MR. R. HAMILTON RUSSELL'S AND MR. W. R. FOX'S CASE OF REMOVAL OF A PIN FROM THE LUNG.

FIG. 1.—The Pin as seen in a Radiogram.

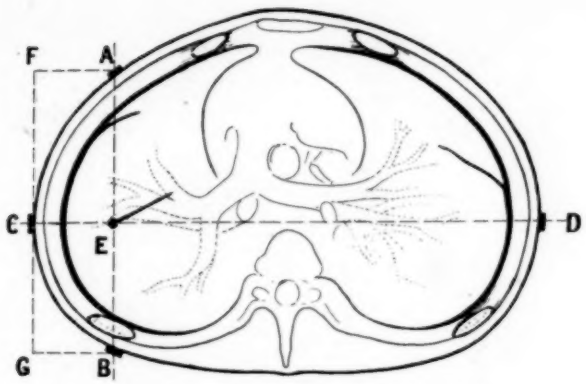


FIG. 2.—Diagram shewing position of localising points

AB—The true antero-posterior horizontal line, settled by situation of E, the head of the pin.

CD—Line extending from side to side at right angles to AB, and passing through E.

FG—Line parallel to AB and passing through C.

GB and FA—(Lines parallel to CE, and the same length) indicate the depth of E.

that a patient might die on the first day of the illness. When the febrile stage had subsided it might be followed by paralysis of the arms and legs. In some of the patients the paralysis seemed to be permanent and in others it had partially or entirely disappeared; but there were cases, and not a few, where the whole of the beginning of the course of the disease exactly resembled the above named cases yet without the occurrence of any paralysis whatever. During the febrile stage the temperature is usually between 38·5° and 39·5°C. and the patient, as a rule, exhibits extreme tenderness in the muscles of the back, neck, and shoulders, as well as stiffness and rigidity of the neck. The sensibility is often so great that the patient screams at the least movement of the muscles controlling the parts just named. It does not seem that any state of coma occurs during the last stage of the disease and when the case ends in death full consciousness is usually maintained to the last. Various methods of treatment have been followed but with little apparent benefit. Isolation of the patient is essential for the purpose of checking the spread of the disease. The remarks attributed to Dr. Levin give no information as to any points of resemblance or difference between the disease in question and the epidemic of cerebro-spinal fever which has existed in Central Europe since the latter part of 1904.

THE BAWDEN FUND.

Mr. Edgar Speyer, the well-known banker, has been made the almoner of a munificent philanthropist—namely, Mr. E. G. Bawden of the Stock Exchange. In a letter communicated to the press Mr. Speyer says that Mr. Bawden has intrusted him with the sum of about £100,000 "to be applied to purposes of charity and benevolence and for the advancement of knowledge, especially in aid of human suffering." With the concurrence of the donor Mr. Speyer has decided to apportion the money to various institutions in the form of capital to be vested in trustees, to be known in each case as the "Bawden Fund." The sum of £16,000 is allotted to complete the sum of £200,000 to bring about the incorporation of University College in the University of London; £10,000 are allotted for East-end emigration; £31,500 are divided between King Edward's Hospital Fund and ten of the metropolitan hospitals; while much of the remainder of the money is allotted to sundry convalescent homes, holiday funds, and various institutions for homeless and crippled children. Mr. Speyer's selection is, we think, a very good one. He has placed a large part of Mr. Bawden's grand gift in places where it will relieve the maximum of human suffering. All honour to Mr. Bawden for his noble gift; may it be the precursor of others from those who are blessed with this world's goods.

RADIO-ACTIVITY IN MINERAL PURGATIVE WATERS.

THERE appears to be little doubt that radio-activity plays an important rôle in the therapeutics of mineral waters and this may possibly account for the more favourable action of natural mineral waters compared with that of waters artificially compounded. In many instances it is difficult to explain the therapeutic value of a water merely upon its mineral constituents. Many waters are of distinct value, although analysis shows that very little mineral matter enters into their composition. The waters at Bath, Buxton, Contrexeville, and Wildbad, may be quoted as examples. These waters are distinguished, however, by being radio-active and in the gases evolved in certain of them helium, which may be regarded as a product of radium, has been found. In a paper read before the Royal Hungarian Society for Natural Science by M. Béla Szilárd some interesting results are recorded concerning the radio-activity of a mineral water known as Igmandi Bitter Water. The springs from which this water is taken are situated in the commune of Igmand, some two hours journey from Komarom. The water has been exported to this country under the name of "Bitter Purgative Water (Lord Roberts label)." The wells are situated on clay soil. The mud raised from the bottom of one of the wells proved to be considerably radio-active. Further inspection of the mud showed the presence of crystals which proved to be chiefly calcium sulphate. On testing the cleavage surfaces of these crystals for radio-activity such strong impressions were obtained and the entire plate was so fogged by the emanations that it was considered worth while to make quantitative measurement of the radiating energy. The effects are sufficiently marked to show on a reproduction of the photograph. Measurements were subsequently obtained leaving no doubt of the remarkable radio-activity of the calcium sulphate crystals. Crystals of the same substance obtained from other sources gave negative results. Next the bitter water itself was examined. The salts obtained by evaporation, after being thoroughly dried, were placed upon very thin black paper in a perfectly dark room upon highly sensitised plates. The plates were placed in a double light-proof box which contained also a porcelain cup filled with anhydrous chloride of calcium to keep the salts dry. After three weeks the plates were developed and in the case of the salts obtained from Igmandi Bitter Water showed strong radio-active effects. There were spots which were not uniform but of various dimensions, some larger, some smaller, some lighter, some darker, apparently in accordance with the shape of the dry crystals and the nature of the contact. It is evident from this research that the Igmandi Bitter Water is decidedly radio-active, the activity being characterised chiefly by emanations. The radio-activity of the water is doubtless derived from the salts in solution, amongst which is calcium sulphate. Even in bottle the radio-activity is preserved for a considerable time. It will be interesting to learn how far radio-activity influences the therapeutic action of the purgative salts. According to recent researches the influence of radio-activity in this connexion would appear to be favourable.

UNTRAINED MIDWIVES.

AN important inquest was held recently at Kingston on the death after childbirth of a woman who had been attended by a midwife. A charge of neglect being brought against the midwife she said that she had been in practice as a midwife for 45 years, gave her age as 65 or 66, and further stated that she was certificated. The baby was born at 9 o'clock at night and, according to the midwife's own admission, there was considerable neglect of the mother. On being questioned by the coroner as to whether she knew how to take the temperature she replied that she did, she did not know the normal temperature of the body and had no thermometer. She was further asked if she understood how to stop bleeding and replied No, but that she would send for a medical man. The jury came to the conclusion that there had been neglect on the part of the midwife and were of opinion that a woman of her age should not be allowed to practise midwifery, for they believed she was much older than she stated herself to be. They further recommended that the case should be reported to the Central Midwives Board. When the new Midwives Act was introduced it was a matter of great difficulty to know what to do with the large number of women who were practising all over the country as midwives and who had never obtained a certificate in midwifery from any recognised institution. It would have been a great hardship to these women if their means of livelihood had been taken away and it was determined, therefore, that those of them who had been in *bonâ-fide* practice as midwives for 12 months previous to July 31st, 1902, should be permitted, on application being made to the Central Midwives Board, to have their names

registered on the roll of midwives. In these conditions naturally a number of untrained and ignorant women are practising in various parts of the country as certificated midwives. As time goes on the number of these women will gradually diminish and their places will be taken by properly trained women who have passed the examinations of the Central Midwives Board. It is difficult to see how any other solution of the problem could have been arrived at without a grave injustice being done to certain competent midwives and without depriving the public of a form of necessary assistance. The Board has, of course, the power necessary to take off the roll the name of anyone who is found to be unfitted or who is convicted of negligence, and no doubt will do so in the case of the midwife in this instance if it finds the views of the coroner and his jury just.

THE BATHS AT HARROGATE.

AN important addition to the bathing facilities at Harrogate has recently been completed by the installation of the necessary appliances for the carrying out of the treatment which has hitherto been almost entirely associated with the French spa, Plombières-les-Bains. In THE LANCET of April 30th, 1904, p. 1186, we published a paper by Dr. de Langenhagen on the Treatment of Muco-membranous Colitis in which the methods adopted at Plombières are set forth in detail. Rectal irrigations when properly carried out are without doubt very valuable in the condition described by Dr. de Langenhagen and also in other diseases of the intestinal tract, such as catarrhal enteritis and intestinal lithiasis. The treatment has also been recommended for appendicitis and in cases of doubtful diagnosis a "hydro-mineral cure" may often be tried with advantage. Dr. de Langenhagen is of opinion that the "intestinal bathing" should be considered as a real "internal dressing" of the mucous membrane, and he therefore claims that rectal irrigation is suitable not only in cases of colitis with constipation but also in those cases in which there are alternations of constipation and of diarrhœa or in cases of chronic diarrhœa. Many patients who cannot from financial or private circumstances proceed to a continental spa can and will go to one in England. This latest addition, then, to the baths of Harrogate is likely to prove a most useful one and the corporation of Harrogate may be congratulated on the enterprise which has just been completed.

CONGRESS OF THE INTERNATIONAL SOCIETY OF SURGERY.

AT the first Congress of the International Society of Surgery, which will be held in Brussels from Sept. 18th to 23rd, one of the subjects for discussion will be the Surgical Treatment of Non-Cancerous Affections of the Stomach. The discussion will be opened by Dr. A. Monprofit, professor of clinical surgery in the Medical School of Angers in France; Mr. A. W. Mayo Robson, Vice-President of the Royal College of Surgeons of England; Dr. J. Rotgans of Amsterdam; and Dr. A. Mattoli of Rome. From abstracts of the forthcoming addresses, published by the secretary of the Congress, it appears that Dr. Monprofit will include in his remarks the operations of puncture of the stomach through the abdominal wall, paragastric exploratory laparotomy, extragastric and intragastric dilatation of the pylorus, pyloroplasty, exploratory gastrotomy, gastrorrhaphy, curetting and cauterisation of gastric ulcers, gastrostomy, partial gastrectomy in various situations, gastroplasty, gastropexy, gastro-anastomosis, anagastrostomosis, total gastrectomy, and gastro-enterostomy. This last is the operation which he considers to be the most applicable in the majority of these diseases of the stomach. Mr. Mayo Robson will deal with the subjects of simple ulcer, hæmorrhage, adhesions of the stomach to adjoining organs or to the abdominal parietes, perforation, hour-glass contraction, tetany of gastric origin, dilatation, gastroptosis, acute phlegmonous gastritis, stenosis of the pylorus, injury of the stomach, hyperchlorhydria, and persistent gastralgia. Dr. Rotgans will confine himself entirely to gastric ulcer and its complications. He recommends operative treatment when the movements of the stomach are interfered with by conditions such as excessive peristalsis, vomiting, hypertrophy of the wall of the stomach, and retention of its contents. In such cases the cause is usually mechanical—namely, stricture of some part of the stomach or the existence of adhesions. The cause may also consist in *troubles dynamo-moteurs*, conditions in which the above-mentioned mechanical defects do not exist and gastroptosis is the only anatomical complication. He would also operate in cases of severe pain, tumours, hæmorrhage, perforation, and emaciation. Dr. Mattoli will discuss the surgical treatment of gastroptosis, pyloric stenosis, circular perforating ulcer, and several other gastric abnormalities. The official languages of the Congress are English, French, German, and Italian. During the proceedings a general meeting will be held to appoint the International Committee, to fix the next place of meeting, and to elect a president. We understand that the Belgian committee will send invitations to fêtes in honour of foreign members of the society on hearing from them. Intimations should be sent direct without delay to the general secretary, Dr. Depage, 75, Avenue Louise, Brussels.

THE SURGEON'S RESPONSIBILITY FOR THE DETAILS OF AN OPERATION.

A MODERN surgical operation in many instances demands on the part of the surgeon not only a high degree of manipulative dexterity but also in a considerable measure the power of organisation. The details of the preparation of the patient, of the dressings, instruments, ligatures, and so on, take up a good deal of time and require special knowledge, and it may be impossible for the really busy surgeon to attend personally to all these matters. It is true that of recent years with the gradual replacement of antisepsis by asepsis these details have been a good deal simplified, but the danger to the patient where asepsis is practised is all the greater if by chance any of the procedure is not carried out with scrupulous accuracy. Whether the surgeon looks after these things himself or is compelled from the pressure of work to intrust them to others there can be no question but that he must be held responsible in the case of any accident occurring. If he has any doubt as to the capability of his nurses then it is his duty to see that their work is properly supervised and checked. If he does not give clear and definite instructions—and whenever it is possible these should be written—then he is alone to blame if his orders are not executed in their entirety. In hospital practice it is obvious that much must be left to resident officers and nurses, but even here it is the duty of the surgeon to inquire from time to time into the manner in which these duties are performed. There is always a tendency on the part of the most conscientious man or woman, although inspired with the best intentions, to become a little careless in the performance of duties which are of the nature of a routine to be carried on quite without supervision. It would seem hardly necessary to call attention to such an obvious truth, but from time to time instances occur in which a surgeon, forgetting human fallibility, has trusted too much to others and has neglected to overlook properly their subordinate work, with disastrous results to the patient. A great responsibility rests upon every surgeon with regard to all, even the minutest, details of an operative procedure, no

matter how impossible it may be for him actually to perform the work himself. This has been recognised by all writers on the subject, indeed, so much has been written about the surgeon's responsibility lately that we should not have thought it necessary any further to allude to it had not a case come to our knowledge recently in which the opposite view was honestly taken by an operating surgeon, who attributed the faulty manner in which certain details had been carried out to the default of a nurse. The nurse may have been incompetent, but that would make it all the more necessary for the surgeon to supervise every circumstance of the procedure before, during, and after the operation. It cannot be too strongly insisted upon that the surgeon, and the surgeon alone, is responsible for every detail of the care of the patients under his charge. It is a terrible blow to the surgeon to know that his well-devised and safe operation has totally failed because of the mistakes of an assistant, but that is the consequence of his responsibility and he cannot escape it.

A CLINICAL BLOOD TUBE.

THE examination of the blood for purposes of aiding diagnosis is becoming a much more frequent procedure than it was a few years back. The calculation of the number of corpuscles and the estimation of the hæmoglobin are both of considerable value in arriving at a conclusion in certain disorders of the blood. There has always been a difficulty, however, in sending samples of blood to a clinical laboratory for examination. Mr. Watkins Pitchgood, government bacteriologist at Pietermaritzburg, has forwarded to us a small piece of apparatus which he calls a "clinical blood tube" and which promises to overcome this difficulty. It consists of a tube containing a measured quantity of a diluting fluid which also prevents the coagulation of the blood added to it. There are also some small capillary tubes, each of which is capable of holding a column of blood equal to one-hundredth of the bulk of the diluting fluid. Consequently, when the blood and the fluid are mixed a 1 per cent. dilution of the blood results. All the tubes are conveniently packed in a metal case similar to those in which clinical thermometers are carried. The blood to be examined is collected in the capillary tube which when full is placed in the fluid contained in the larger tube. The latter is thoroughly shaken until the blood in the capillary tube has escaped and becomes uniformly diffused throughout the diluent. Numerous comparisons have been made between this method of preparing the blood for examination and the one usually employed with the Thoma-Zeiss apparatus. The results are perfectly satisfactory. We believe that the use of this little instrument will be found very valuable in forwarding samples of blood for examination and the amount of technique required is small.

BLACK SMOKE FROM RAILWAY ENGINES.

THE Salford corporation recently summoned the Lancashire and Yorkshire Railway Company for an alleged smoke nuisance. The case was heard on August 23rd and the company was fined 5s. and costs. Railway companies are great offenders in this way not only in Salford, where numerous complaints have been made by residents, but all over the country. The goods trains sin more grievously than the passenger trains, possibly in part because inferior coal is used but very frequently from bad stoking. As to the latter, the companies must be a good deal at the mercy of their servants, but if a sufficient watch were kept the special offenders would soon be discovered and could be dealt with. The solicitor who represented the company said that "the defendants desired to avoid the emission of black smoke so far as possible and they asked that prompt intimation should be given to them by the corporation of any further offence." These "intimations" might very well be given by the people who suffer without going through the corporation. If the companies are sincere in their contrition private complaints would be attended to, while if such complaints were disregarded at first their frequent repetition by numerous residents might lead to reform. Those who know Salford, and what may be called its normally high standard of smoke pollution, will understand that the black smoke from the engines must be black indeed and very offensive to lead to complaints from those who live habitually in an atmosphere so sooty and foul. Among the various factors rendering town life injurious smoke holds an important place and ought to be persistently fought as a "nuisance injurious to health." An old saying was that a coach and four could be driven through an Act of Parliament. Now the locomotive finds it an easy task, for under the Railway Clauses Consolidation Act the railway companies were to have their engines so constructed as to consume their own smoke. Apparently the requirement is a dead letter in this country. In Germany it appears that the Ministry of Commerce and Trade has instituted "travelling courses of instruction for firemen. ..... The interest shown in the instruction is constantly increasing and its value, based on the results obtained, is more and more appreciated." This refers to stationary boilers, and some instruction in their safe and economical management if followed in practice would do much to lessen the smoke nuisance, but the instruction might with advantage be extended to the management of locomotives, which are accountable for a considerable share in causing annoyance and damage of various kinds as they rush through the land.

A PROVINCIAL sessional meeting of the Royal Sanitary Institute will be held in the council chamber, Guildhall, York, on Saturday, Oct. 7th, at 11 A.M. A discussion will take place on Pure Milk-supply, to be opened by a paper by Mr. C. W. Sorensen of the White Rose Dairy Farm, York, and formerly chief dairy expert to the New Zealand Government, on Some Aspects of the Pure Milk Problem from Within. Mr. T. H. Appleton will also read a short paper on the New Earswick Model Cottages. The chair will be taken by Colonel J. Lane Notter, R.A.M.C. Tickets for admission of visitors may be had on application to Dr. E. M. Smith, Guildhall, York; or to Mr. E. White Wallis, Parkes Museum, Margaret-street, W.

THE Harben lectures will be delivered in the lecture room of the Royal Institute of Public Health, of which Lord Strathcona has been elected President, on Tuesday, Oct. 10th, Thursday, the 12th, and Tuesday, the 17th, by Professor Thomas Oliver, physician to the Royal Infirmary, Newcastle-upon-Tyne. The subject chosen is Some of the Maladies caused by the Air we Breathe in the Home, the Factory, and the Mine, including a description of Caisson Disease or Compressed Air Illness. The lectures are open to the public and all interested are cordially invited to be present.

THE death is announced of Dr. Thomas Herbert Littlejohn, medical officer of health of Hampstead, from heart failure due to an accidental overdose of sulphonal. The deceased, who was the son of Sir Henry Littlejohn, medical officer of health of Edinburgh, was only 38 years of age and was generally regarded as a very sound and capable sanitarian.

A SUM of £10,000 has been received by the honorary secretaries of King Edward's Hospital Fund for London. The sum, which is to be retained as capital, is part of a bequest left by the late Miss Marianne Frances Hasker to be devoted to charity at the discretion of her executors.

REPORTS OF THE COMMISSION ON SLEEPING SICKNESS OF THE ROYAL SOCIETY.[1]

THE report of the work of the Commission is by this volume brought up to Nov. 15th, 1904. The evidence brought forward shows (1) that sleeping sickness is at first a specific polyadenitis caused by the trypanosoma Gambiense; (2) that a constant lymphocytosis exists at all stages of the disease; (3) that sleeping sickness is the last stage of this disease and is invariably fatal; (4) that resistance of both men and monkeys varies greatly and acquired immunity is probable; (5) that the action of arsenic in vita on the trypanosoma Gambiense is partial; (6) that bacterial invasion, chiefly coccal, occurs in some cases in the very last days of the sleeping-sickness stage of the disease and therefore cannot determine the onset of this phase of the malady; (7) that in Uganda trypanosomes other than the trypanosoma Gambiense are pathogenic in animals; (8) that these differ entirely from trypanosoma Gambiense; (9) that one of these is probably identical with trypanosoma Brucei; and (10) that all trypanosomes are conveyed from the sick to the healthy by the tsetse fly, glossina palpalis, and not by other biting flies (stomoxys). In the sleeping sickness areas in Uganda from 50 to 75 per cent. of the inhabitants are in the stage of polyadenitis and are carrying on their ordinary work, and these infected people from the fact that they present no symptoms of illness are especially liable to infect "clean" fly belts and so bring about a spread of the disease. Recently the districts around Lake Albert and the source of the Nile have become infected and the presence or absence of glossina palpalis in Egypt becomes an important factor in determining the spread of the disease to the north along the shores of the Nile.

A feature in the morbid anatomy of sleeping sickness to which attention has not previously been directed is a curious condition found in the stomach. The condition is comparable with the petechial hæmorrhages met with under the endo- and epicardium of the heart in trypanosoma infections. The following points have been determined: 1. The lymphatic glands of every case of sleeping sickness are enlarged and the juice taken by puncture during life contains many active trypanosomes and also disintegrating forms. 2. The lymphatic glands of cases of so-called "trypanosoma fever" are enlarged and the juice taken by puncture during life contains active and disintegrating trypanosomes. 3. Lymphocytosis occurs in all cases of sleeping sickness. 4. The cells of the cerebro-spinal fluid of cases of sleeping sickness taken during life by lumbar puncture are lymphocytes and are more numerous in the late stages of the disease. 5. The gland juice in a certain proportion of cases in the last stage of the disease becomes infected by bacteria, especially diplo-streptococci. 6. Injection of a pure culture of diplo-streptococci obtained from cases of sleeping sickness did not produce any alteration of temperature or other morbid sign in the healthy animal nor in the animal infected by trypanosomes, but at an early stage of the disease; in one monkey seriously ill at the time of injection a local suppuration was produced. 7. "Trypanosoma fever" would appear to be an early stage of the disease—sleeping sickness.

In regard to the report on Sleeping Sickness in the Nile Valley by Captain E. D. W. Greig, I.M.S., the general situation is that the disease is slowly spreading in the "fly belt" and will extend to its northern and southern limit. The fly belt does not extend into the Sudan and therefore the disease will not reach the Nile Valley in this direction, but as the glossina morsitans, a closely allied species to the glossina palpalis, exists in the Bahr-el-Ghazal province the possibility of the disease being carried by this fly must be regarded as probable.

Mr. E. G. Austin contributes a chapter on the Distribution of the Tsetse Fly, with a map showing the localities in the African continent where it is known to exist.

Lieutenant A. C. H. Gray, R.A.M.C., and Lieutenant F. M. G. Tulloch, R.A.M.C., give the result of their experiments in connexion with the multiplication of trypanosoma Gambiense in the alimentary canal of glossina palpalis. An enormous increase was observed in about 10 per cent. of the flies 24 hours after feeding, which continued at later periods up to 12 days in a total of 5·6 per cent. of them. The proportion of freshly caught flies in a sleeping sickness district (Entebbe) which contained trypanosomes was tested, when it was found that out of 200 flies examined two contained an enormous number of the parasites.

[1] Volume No. V. Continuation Report on Sleeping Sickness in Uganda. By Captain E. D. W. Greig, I.M.S., and Lieutenant A. C. H. Gray, R.A.M.C. London: Printed for His Majesty's Stationery Office by Harrison and Sons, St. Martin's-lane. Illustrated. Pp. 227.

THE INTERNATIONAL CONGRESS ON TUBERCULOSIS.

THE International Congress on Tuberculosis will be held in Paris from Oct. 2nd to 7th, under the presidency of Dr. Herard, Professor Chauveau and Professor Brouardel being vice-presidents. It will be divided into four sections, of which Sections 1, 2, and 3 will respectively deal with the Medical Pathology of Tuberculosis (President, Professor Bouchard), the Surgical Pathology of Tuberculosis (President, Professor Lannelongue), and the Prevention and Treatment of Tuberculosis in Children (President, Professor Grancher), while Section 4 will be separated into two subsections, of which one will consider the Prevention and Treatment of Tuberculosis in Adults (President, Professor L. Landouzy) and the other will be devoted to Social Hygiene (President, M. Paul Strauss). All the meetings will take place in the Grand Palais, Avenue d'Antin, Champs Élysées. The subjects for discussion in Section 1 will be (1) the Treatment of Lupus and (2) the Early Diagnosis of Tuberculosis. In Section 2 they will be (1) the Comparative Study of the Various Forms of Tuberculosis; (2) Ileo-cæcal Tuberculosis; (3) Surgical Intervention in Tuberculosis of the Meninges and Encephalon; and (4) Tuberculosis and Traumatism. In Section 3 there will be four subjects for discussion relating to tuberculosis in families and schools and to its treatment in seaside homes. In Section 4 the subjects will be (1) the Etiology of Tuberculosis; (2) Insurance; (3) Influence of Dispensaries and Sanatoriums in the Prevention of Tuberculosis; (4) Hygiene of Dwellings; (5) Tuberculosis among Workers in Shops and Factories, in the Army and in the Navy; and (6) Disinfection in Relation to Tuberculosis. An exhibition will be held at the Grand Palais in connexion with the Congress and will remain open to the public during the whole month of October; it will be arranged in four sections—Pathological, Industrial, Social, and Historical.

Ordinary members of the Congress paying a subscription of 25 francs are entitled to take part in the work of the meetings and to receive its publications; their wives, sisters, and children may be admitted as associate members on payment of a subscription of 10 francs but must not speak or vote at the meetings. Both ordinary and associate members may attend all the receptions and other festivities held in connexion with the Congress; they are also entitled to the reduction of fares granted by the various railway companies. Return tickets (London to Paris and back) available for 14 days will be granted by the South-Eastern and Chatham Company and by the London and Brighton Company at the following rates:—South-Eastern Railway, first class, 58*s.* 4*d.*, second class, 37*s.* 6*d.*; Brighton Railway, first class, 39*s.* 3*d.*, second class, 30*s.* 3*d.* Intending travellers by these routes should apply to the National Association for the Prevention of Consumption and other Forms of Tuberculosis, 20, Hanover-square, London, W. The receptions and other festivities will include a reception by M. Loubet, the President of the Republic, a reception at the Hôtel de Ville by the municipality, a soirée given by the President of the Congress, the opening ceremonial at the Grand Palais, the closing ceremonial in the Grand Amphithéâtre de la Sorbonne, a banquet, and a gala evening. Visits will be made to the sanatoriums of Bligny (Seine-et-Oise) and Angicourt (Oise), to the hospitals for consumptive children in Ormesson, Villiers, Noisy, and elsewhere, to the Boucicaut Hospital, to the Institut Pasteur, and to various other establishments directly connected with the treatment or prevention of tuberculosis. Ladies will be received by a ladies' committee which will arrange for them excursions in Paris and the neighbourhood. After the Congress journeys

will be made by special trains to institutions at Mont-des-Oiseaux (Riviera), Durtol (Auvergne), Hauteville (Ain), La Motte-Beuvron (Sologne), Montigny (Nord), and elsewhere.

The official languages of the Congress are French, English, and German. Members wishing to make a communication in one of the four sections must previously, if in France, send an application to the president of the section, but if in another country the application must be sent to the president of the national committee. The President of the national committee for Great Britain is Sir William H. Broadbent, 84, Brook-street, London, W., and the secretary is Dr. J. J. Perkins, 20, Hanover-square, London, W. No communication is to be made at a meeting unless its text has previously been submitted to the bureau of the Congress and written permission obtained from the president of the section. Ten minutes are allowed for each communication. Subscriptions will be received up to Sept. 30th inclusive by M. Pierre Masson, the treasurer, at the offices of the Congress, 21, rue de l'École de Médecine, Paris, and only his receipt will be acknowledged on behalf of the Congress. For objects to be shown at the exhibition application should be made to the Commissariat-Général at the above address. On Oct. 1st the office of the Congress will be transferred to the Grand Palais, where the meetings will be held.

Public Health and Poor Law.

LOCAL GOVERNMENT BOARD.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

City of Liverpool.—The population of this important city during 1904 was estimated at 723,430, a total which is still materially behind that of Glasgow which was estimated at 798,357. Had Parliament consented to the absorption by Liverpool of Bootle the population of the extended Liverpool would apparently have almost equalled that of Glasgow, and it would then have devolved upon Glasgow to apply for another extension scheme. Parliament, however, decided otherwise and the decision is likely to have a material effect upon future extension schemes. The birth-rate of Liverpool for 1904 was 33·5 per 1000 and the death-rate 21·9 per 1000. As regards the important subject of infantile mortality the rates for 1904 ranged from 133 per 1000 births in Abercrombie district to no fewer than 281 in Exchange district. Liverpool still remains one of the very few places in the United Kingdom in which cases of typhus fever occur, and during 1904 there were 97 cases with 25 deaths from this disease, the yearly deaths during the last nine years having been as follows: 24, 36, 23, 19, 13, 11, 14, 25, and 57. Pulmonary tuberculosis is notifiable in a voluntary sense in Liverpool and has been so since the beginning of 1901. During 1904 there were 1897 cases notified and of these 188 were duplicates. The deaths numbered 1481, so that it is probable that but few early cases suitable for sanatorium treatment were brought to the notice of the health authority. This is regrettable, more especially as there are, we believe, two sanatoriums for the people of Liverpool—one at Heswall for paupers and the other at Delamere Forest for the working classes. We are glad to see that the smoke nuisance continues to be attacked by the Liverpool health authorities and that in the campaign the steamers on the Mersey are not allowed to escape. It is true that the smoke which rises from the Mersey traffic sometimes lends to Liverpool as viewed from Birkenhead an almost Turneresque effect, but those who are not artists would prefer to see the outlines of the city more distinctly. In this direction it is satisfactory to learn that the inclusion of Garston in the city limits has resulted in a reduction of smoke from the several copper-rolling mills in that locality. Dr. E. W. Hope reports that since the introduction of carburetted water-gas into Liverpool, presumably in 1895, eight cases, with six deaths, of poisoning by this gas have occurred. As regards milk control, the Liverpool Corporation Act, 1900, confers special powers upon the authorities and by its provisions inspectors are able to visit the various railway stations and take samples of milk which have been sent in from outside the city boundaries. If the milk is found to be contaminated with tuberculosis the veterinary superintendent, accompanied by a representative of the medical officer of health, may examine all the cattle in the cowshed from which the sample in question was derived. These "foreign" cowsheds contrast, Dr. Hope tells us, very unfavourably with those within the city limits. He speaks well of the operations of the Act in so far as Liverpool is concerned but, as he points out, there is nothing whatever to prevent the milk which is refused by Liverpool from being sent to other parts of the country where there are no "milk clauses" in operation. Liverpool consumes some 30,000 gallons of milk daily and of this amount about 17,000 gallons are produced within the city and about 13,000 introduced from outside. With a view to the reduction of infantile diarrhœa the corporation of the city of Liverpool has provided four milk depôts for the production of sterilised and humanised milk and this milk is distributed through the agency of 44 milkshops situated in different parts of the city. Dr. Hope observes that these milk depôts have been objected to on the ground that they may tend to save the lives of the children of the very poor who are already overburdened with offspring and that the expenditure may add a twelfth of a penny to the rates! The statistics furnished in the report before us are worth quoting, although, as Dr. Hope admits, no very great importance should be attached to them alone. Out of 5850 infants coming very promiscuously to the depôts (not to the shops) at varied ages and in conditions of health below the average, the mortality was 89 per 1000 (? children brought) as against 196 per 1000 (? births) for the city as a whole, 133 to 138 for the best districts and 258 to 281 for the worst. Dr. Hope points out, too, that the rates for children not attending the depôt above referred to include a large number of breast-fed infants and that if these were excluded the advantages in favour of the depôt would be much increased. It appears, too, that there is much evidence from parents, medical men, and others as to the value of these depôts and perhaps this testimony is more convincing than the statistics. All those interested in milk depôts should read this part of Dr. Hope's valuable report.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In 76 of the largest English towns 8646 births and 5188 deaths were registered during the week ending August 26th. The annual rate of mortality in these towns, which had been 17·0, 17·5, and 17·4 per 1000 in the three preceding weeks, declined to 17·3 per 1000. In London the death-rate was 16·7 per 1000, while it averaged 17·6 per 1000 in the 75 other large towns. The lowest death-rates in these towns were 5·5 in Hastings, 6·8 in Hornsey and in Northampton, 8·2 in King's Norton, 9·2 in Burton-on-Trent, and 10·0 in Leyton; the highest rates were 23·3 in Merthyr Tydfil, 23·4 in Hanley, 23·9 in Great Yarmouth and in Middlesbrough, 24·8 in Salford, 25·9 in Rhondda, 26·2 in Burnley, and 29·8 in Grimsby. The 5188 deaths in these towns included 1580 which were referred to the principal infectious diseases, against 1507, 1626, and 1574 in the three preceding weeks; of these 1580 deaths, 1367 resulted from diarrhœa, 65 from whooping-cough, 53 from measles, 40 from scarlet fever, 33 from diphtheria, and 22 from "fever" (principally enteric), but not any from small-pox. The lowest death-rates from these diseases were recorded in Hornsey, Hastings, Brighton, Reading, Devonport, Burton-on-Trent, Smethwick, Huddersfield, and Halifax; and the highest rates in West Ham, Wolverhampton, Grimsby, Stockport, St. Helens, Wigan, Burnley, Preston, Hull, Rhondda, and Merthyr Tydfil. The greatest proportional mortality from measles occurred in Barrow-in-Furness; from scarlet fever in Blackburn; from diphtheria in Middlesbrough; and from diarrhœa in West Ham, Wolverhampton, Grimsby, Stockport, St. Helens, Wigan, Burnley, Preston, Hull, Rhondda, and Merthyr Tydfil. The mortality from whooping-cough and from "fever" showed no marked excess in any of the large towns. No fatal cases of small-pox were registered either in London or in any of the large provincial towns, and no cases remained under treatment in the Metropolitan Asylums Hospitals on Saturday, August 26th. The number of scarlet fever cases in these hospitals and in the London Fever Hospital at the end of the week was 2762, against 2632, 2670, and 2735 at the end of the three preceding weeks; 343 new cases were admitted during the week, against 366,

355, and 361 in the three preceding weeks. The deaths in London referred to pneumonia and diseases of the respiratory system, which were 111, 112 and 117 in the three preceding weeks, further rose to 118 in the week under notice and were 17 above the number in the corresponding period of last year. The causes of 41, or 0·8 per cent., of the deaths in the 76 towns were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Bristol, Leicester, Nottingham, Salford, Leeds, Newcastle-on-Tyne, and in 50 other smaller towns; the greatest proportions of uncertified deaths were registered in Portsmouth, Birmingham, Liverpool, Blackburn, Sheffield, and Sunderland.

In 76 of the largest English towns 8352 births and 5189 deaths were registered during the week ending Sept. 2nd. The annual rate of mortality in these towns, which had been 17·5, 17·4, and 17·3 per 1000 in the three preceding weeks, was again 17·3 per 1000 last week. In London the death-rate was 17·2 per 1000, while it averaged 17·4 per 1000 in the 75 other large towns. The lowest death-rates in these towns were 4·3 in Hornsey, 8·0 in Burton-on-Trent, 8·2 in King's Norton, 8·4 in Handsworth (Staffs.), 9·2 in West Bromwich, 10·0 in Smethwick, 10·1 in Reading, and 11·0 in Bournemouth; the highest rates were 21·4 in Bury, 21·6 in Salford, 22·1 in Preston, 22·4 in Liverpool, 22·6 in Manchester, 25·2 in Grimsby, 25·8 in Hanley, and 26·6 in Sunderland. The 5189 deaths in these towns last week included 1432 which were referred to the principal infectious diseases, against 1626, 1574, and 1580 in the three preceding weeks; of these 1432 deaths 1189 resulted from diarrhœa, 73 from whooping-cough, 66 from measles, 44 from scarlet fever, 35 from diphtheria, and 25 from "fever" (principally enteric), but not any from small-pox. No death from any of these diseases was registered last week in Bournemouth; among the other towns the lowest death rates from the principal infectious diseases were recorded in Hornsey, Hastings, Reading, Devonport, Stockton-on-Tees, and Tynemouth, and the highest rates in Ipswich, Hanley, Wolverhampton, Walsall, Grimsby, Wigan, Bury, Burnley, Preston, York, Hull, and Sunderland. The greatest proportional mortality from measles occurred in Merthyr Tydfil and Swansea; from whooping-cough in West Hartlepool; and from diarrhœa in Ipswich, Hanley, Wolverhampton, Walsall, Grimsby, Wigan, Bury, Burnley, Preston, York, Hull, and Sunderland. The mortality from scarlet fever, from diphtheria, and from "fever" showed no marked excess in any of the large towns. No death from small-pox was registered last week in any of the large towns, and no case of this disease remained under treatment on Saturday, the 2nd inst., in the Metropolitan Asylums Hospitals. The number of scarlet fever patients in these hospitals and in the London Fever Hospital, which had been 2670, 2735, and 2762 at the end of the three preceding weeks, had further risen to 2873 at the end of last week; 427 new cases were admitted during the week, against 355, 361, and 343 in the three preceding weeks. The deaths in London referred to pneumonia and diseases of the respiratory organs, which had been 112, 117, and 118 in the three preceding weeks, further rose to 131 last week, and were 23 above the number in the corresponding period of last year. The causes of 37, or 0·7 per cent., of the deaths in the 76 towns last week were not certified, either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Portsmouth, Bristol, Salford, Hull, Newcastle-on-Tyne, and in 46 other smaller towns; the largest proportions of uncertified deaths were registered in Northampton, Birmingham, Blackburn, Sheffield, and Gateshead.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 14·8, 13·8, and 15·1 per 1000 in the three preceding weeks, declined again to 14·0 per 1000 during the week ending August 26th, and was 3·3 per 1000 below the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 11·1 in Greenock and 11·5 in Aberdeen to 15·9 in Dundee and 16·8 in Perth. The 471 deaths in these towns included 61 which were referred to diarrhœa, 18 to whooping-cough, nine to measles, two to scarlet fever, and one to "fever," but not any to small-pox or diphtheria. In all 91 deaths resulted from these principal infectious diseases, against 94, 67, and 74 in the three preceding weeks. These 91 deaths were equal to an annual rate of 2·7 per 1000, which was 2·6 per 1000 below the mean rate from the same diseases in the 76 large English towns. The fatal cases of diarrhœa, which had been 44 in each of the two preceding weeks, increased to 61, of which 34 occurred in Glasgow, ten in Edinburgh, five in Aberdeen, four in Dundee, four in Greenock, two in Paisley, and two in Leith. The deaths from whooping-cough, which had been 14, 10, and 16 in the three preceding weeks, further rose to 18, and included 11 in Glasgow and three in Paisley. The fatal cases of measles, which had been eight in each of the two preceding weeks, increased to nine, all of which were registered in Glasgow. The deaths from scarlet fever, which had been two, one, and one in the three preceding weeks, rose again to two during the week under notice, and both occurred in Edinburgh. The deaths referred to diseases of the respiratory organs in these towns, which had been 48, 33, and 41 in the three preceding weeks, further rose to 44, but were 11 below the number in the corresponding period of last year. The causes of 15, or more than 3 per cent., of the deaths registered in these eight towns were not certified.

The annual rate of mortality in eight of the principal Scotch towns, which had been 13·8, 15·1, and 14·0 per 1000 in the three preceding weeks, rose again to 14·8 per 1000 during the week ending Sept. 2nd, but was 2·5 per 1000 below the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 10·2 in Leith and 11·2 in Aberdeen to 15·7 in Glasgow and 17·2 in Dundee. The 496 deaths in these towns included 63 which were referred to diarrhœa, 14 to whooping-cough, seven to measles, six to diphtheria, four to "fever," and two to scarlet fever. In all, 96 deaths resulted from these principal infectious diseases last week, against 67, 74, and 91 in the three preceding weeks. These 96 deaths were equal to an annual rate of 2·9 per 1000, which was 1·9 per 1000 below the mean rate last week from the same diseases in the 76 large English towns. The fatal cases of diarrhœa, which had been 44, 44, and 61 in the three preceding weeks, further rose last week to 63, of which 34 occurred in Glasgow, 11 in Edinburgh, 10 in Dundee, five in Aberdeen, and two in Greenock. The deaths from whooping-cough, which had been 10, 16, and 18, in the three preceding weeks, declined again to 14 last week, and included eight in Glasgow. The fatal cases of measles, which had been eight, eight, and nine in the three preceding weeks, fell last week to seven, of which six were registered in Glasgow. The deaths from diphtheria numbered six last week, against none in each of the two preceding weeks, and included three in Glasgow and 2 in Edinburgh. The fatal cases of "fever," which had been one, five, and one in the three preceding weeks, rose again last week to four, of which three occurred in Glasgow, one being a case of typhus. The deaths referred to diseases of the respiratory organs in these towns, which had been 33, 41, and 44 in the three preceding weeks, further rose last week to 53, and were identical with the number in the corresponding period of last year. The causes of 18, or nearly 4 per cent., of the deaths in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 21·2, 19·7, and 19·9 per 1000 in the three preceding weeks, declined again to 19·8 per 1000 during the week ending August 26th. During the previous four weeks the death-rate has averaged 20·2 per 1000, the rates during the same period being 16·7 in London and 14·4 in Edinburgh. The 144 deaths of persons belonging to Dublin registered during the week under notice were one fewer than the number in the preceding week and included 27 which were referred to the principal infectious diseases, against 20, 25, and 21 in the three preceding weeks; of these, 25 resulted from diarrhœa, one from measles, and one from diphtheria, but not any from small-pox, scarlet fever, whooping-cough, or "fever." These 27 deaths were equal to an annual rate of 3·7 per 1000, the death-rates from the principal infectious diseases being 5·0 in London and 2·0 in Edinburgh. The fatal cases of diarrhœa, which had been 25, 24, and 18 in the three preceding weeks, rose again during the week under notice to 25. The 144 deaths in Dublin included 43 of children under one year of age and 34 of persons aged 60 years and upwards;

the deaths of infants were slightly below the number in the preceding week, while those of elderly persons showed an excess. Six inquest cases and seven deaths from violence were registered; and 56, or nearly two-fifths, of the deaths occurred in public institutions. The cause of one, or 0·7 per cent., of the deaths registered in Dublin during the week under notice was not certified.

The death-rate in Dublin, which had been 19·7, 19·9, and 19·8 per 1000 in the three preceeding weeks, rose again to 22·0 per 1000 during the week ending Sept. 2nd. During the past four weeks the death-rate has averaged 20·4 per 1000, the rates during the same period being 17·1 in London and 14·1 in Edinburgh. The 160 deaths of persons belonging to Dublin registered during the week under notice were 16 in excess of the number in the preceding week, and included 23 which were referred to the principal infectious diseases, against 25, 21, and 27 in the three preceding weeks; of these 19 resulted from diarrhœa, two from measles, one from diphtheria, and one from "fever," but not any from small-pox, from scarlet fever, or from whooping-cough. These 23 deaths were equal to an annual rate of 3·2 per 1000, the death-rates last week from the principal infectious diseases being 4·4 in London and 2·2 in Edinburgh. The fatal cases of diarrhœa, which had been 24, 18, and 25 in the three preceding weeks, declined again last week to 19. The 160 deaths in Dublin last week included 32 of children under one year of age and 41 of persons aged 60 years and upwards; the deaths of infants showed a decline from the number in the preceding week, while those of elderly persons was in excess. Four inquest cases and two deaths from violence were registered; and 51, or nearly one-third, of the deaths occurred in public institutions. The causes of four, or 2·5 per cent., of the deaths registered in Dublin last week were not certified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Fleet Surgeons:—J. L. Thomas to the *Victory* and J. Sagrue to the *Excellent*. Staff Surgeons: W. B. Macleod, on recommissioning; W. M. Keith to the *Æolus*; R. D. Jameson to the *Eclipse*; G. R. MacMahon to the *Leander*; R. S. Bernard to the *Calypso*; F. Fedarb to the *Doris*; and E. R. Grazebrook to the *Arrogant*. Surgeons: F. R. Featherstone to the *Renown*; G. Ross to the *Terrible*; C. J. Boucher to the *Woodlark*; M. T. Mate and G. H. S. Milln to the *Vivid*; J. E. Johnston to the *Arrogant*; J. H. Fergusson to the *Cambridge*, for the *Theseus*; A. G. Eastment to the *President*, for three months' course of hospital study; L. M. Morris to the *Impregnable*; B. Pick to the *Terrible*; A. C. W. Newport to the *Victory*; R. R. Fasson and W. G. M. Anderson to the *Leander*; A. Woollcombe to the *Psyche*; J. G. Peebles to the *Pandora*; J. St. J. Murphy to the *Eclipse*; and W. P. Walker to the *Racer*, for Osborne sick quarters.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel W. J Baker has been appointed officer in charge of the Military Hospital, Arthur Hill, Ireland. Captain T. J. Crean, V.C., has been appointed for duty with the troops of the London district. Captain W. M. Power has been transferred from the 6th (Poona) Division to the 5th (Mhow) Division. Brigade Surgeon J. Hector, retired pay, has been permitted to resign his post as medical officer in the London recruiting area. The Army Council has decided to cancel the order directing medical officers returning home at the end of a tour of service abroad to report themselves personally to the Director-General. These officers will in future report themselves to the War Office in writing. Lieutenant-Colonel J. Carmichael will embark for India in October. Captain T. H. M. Clarke, C.M.G., D.S.O., has been appointed for service in India (Eastern command).

Lieutenant D. D. Paton resigns his commission. Lieutenant-Colonel Arthur de C. Scanlan retires on retired pay.

The undermentioned gentlemen have been appointed Lieutenants on probation:—John Allan Anderson, Cuthbert Garrard Browne, Hugh Godwin Sherren, Henry Horace Andrews Emerson, Wallace Benson, Rowland Philip Lewis, George Edward Ferguson, James Herries Graham, Charles Ernest White Spinner Fawcett, Thomas Scatchard, Ronald Anderson Bryden, Arthur Edmund Stewart Irvine, Thomas Bettesworth Moriarty, Alexander Macgregor Rose, Edward Lawton Moss, Edward Guy Anthonisz, Griffith Henry Rees, Vivian Hood Symons, Walter John Weston, Mortimer John Cromie, Percy Farrant, Albert Edward Francis Hastings, George William Webb Ware, Michael Balfour Hutchison Ritchie, James Stuart Dunne, William McConaghy, Francis Cornelius Sampson, Charles Francis White, Cecil John Wyatt, Wilfrid Cowan Nimmo, Edmund Thurlow Potts, Michael Keane, Arthur Drought O'Carroll, Robertson Stewart Smyth, Arthur James Arch, Thomas Somers Blackwell, Harold Edgar Priestley, Alan Cunliffe Vidal, Philip Janvrin Marett, and Hugh Stewart.

The undermentioned lieutenants are seconded under the provisions of Article 349, Pay Warrant: Charles G. Browne, Percy Farrant, Cecil J. Wyatt, and Robertson S. Smyth.

ROYAL ARMY MEDICAL CORPS (VOLUNTEERS).

Northern Command: Leeds Companies: Lieutenant A. E. L. Wear to be Captain.

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Captain J. H. Stacy to be Surgeon-Major. Surgeon-Lieutenant-Colonel E. L. Freer, having resigned his commission in the Volunteers, ceases to belong to the Army Medical Reserve of Officers.

IMPERIAL YEOMANRY.

Pembroke: Surgeon-Lieutenant J. Wilson to be Surgeon-Captain.

VOLUNTEER CORPS.

Royal Garrison Artillery (Volunteers): 2nd Middlesex: Surgeon-Captain and Honorary Surgeon-Major (Honorary Captain in the Army) A. Thorne to be Surgeon-Major.

Rifle: 2nd Volunteer Battalion the Durham Light Infantry: Surgeon-Lieutenant W. Bratton resigns his commission. 2nd Volunteer Battalion the Hampshire Regiment: Surgeon-Major (Surgeon-Lieutenant-Colonel, Army Medical Reserve of Officers) A. B. Wade to be Surgeon-Lieutenant-Colonel. 5th Volunteer Battalion the South Wales Borderers: Surgeon-Captain J. R. I. Raywood resigns his commission. 1st (Brecknockshire) Volunteer Battalion the South Wales Borderers: Surgeon-Captain D. Thomas to be Surgeon-Major. 1st (Exeter and South Devon) Volunteer Battalion the Devonshire Regiment: Surgeon-Lieutenant J. S. S. Perkins to be Surgeon-Captain. 1st Surrey (South London): Surgeon-Captain W. A. Atkinson to be Surgeon-Major.

THE AUSTRALIAN FORCES IN SOUTH AFRICA.

The following medical officers of the Australian military forces are granted temporary rank in the army whilst serving in South Africa:—To be Major: Andrew Honman, 2nd Contingent Victorian Mounted Rifles; and Walter Blake Nisbet, 4th Queensland Imperial Bushmen. To be Captain: James de Burgh Griffiths, 3rd Victorian (or Bushmen's) Contingent; Alfred Hobart Sturdee, 4th Victorian Contingent (Australian Imperial Regiment); Herbert Russell Nolan, 2nd Queensland Mounted Infantry; Albert Theophilus Duka, 3rd Queensland Mounted Infantry; Harold John Hutchens, 5th Queensland Imperial Bushmen; Edward Reginald Row, 6th Queensland Imperial Bushmen; John Tresselian Toll, 1st Contingent South Australian Infantry; George Frederick McWilliams, 1st West Australian Contingent; John Mitchell Young Stewart, 2nd Western Australian Contingent; Frederick John Ingoldby, 3rd Western Australian Contingent; Walter Gibson, 4th Western Australian Contingent; Joseph Ignatius Flynn, 5th West Australian Contingent; and Frederick Bentley Reid, 6th West Australian Contingent. To be Lieutenant: James Harold Patterson, 5th Contingent Victorian Mounted Rifles; Francis Charles Douglas, 3rd Contingent South Australian Bushmen: and Charles Mattei, 2nd Tasmanian Contingent.

DEATHS IN THE SERVICES.

Brigade Surgeon-Lieutenant-Colonel Mathew Moriarty Gallwey, late Royal Army Medical Corps, on August 30th, at 3, Suffolk-place, Pall Mall, London, S.W., aged 63 years. He entered the service as assistant surgeon in October, 1867, was promoted surgeon in March, 1873, surgeon-major in October, 1879, lieutenant-colonel in October, 1887, and brigade-surgeon-lieutenant-colonel in August, 1893, retiring in August, 1897.

AMBULANCE DOGS.

At the approaching review of volunteers in Edinburgh the ambulance service will include six dogs, trained by Major Richardson of Panbride, Carnoustie, for ambulance work in time of war. These animals have taken part in military manœuvres during the past two years. Last year they were

at Stobs, and this year they were tried on several occasions with both the regulars and the volunteers at Buddon and Barry camps, and a few weeks ago they were in use in manœuvres in the South of England.

THE LATE WAR IN THE FAR EAST.

With the signing of the treaty of peace by the Russian and Japanese plenipotentiaries one of the biggest and most remarkable wars on record becomes a thing of the past. It is happily not for us to criticise the terms of the treaty or to dwell upon the political results which may be expected to follow. It is sufficient to say that, from a humanitarian point of view, the treaty puts an end to an enormous sacrifice of life. The history of the war in its medical and sanitary, as well as in its military, aspects has yet to be written. Meanwhile the main facts connected with its history—from the causes which gave rise to it and the momentous events which characterised its course up to the final act of signing the treaty which put a stop to it—are sufficiently well known. These facts speak for themselves and we cannot refrain from calling attention to them on account of the contrast exhibited between the very dignified but modest tone adopted by the Mikado in his telegram to President Roosevelt in appreciation of the latter's services and that shown by the Czar in the nature and tone of his address to the Russian army under General Linievitch.

The First Commissioner of Works, &c., with the concurrence of the Lords Commissioners of His Majesty's Treasury, has appointed Surgeon-Lieutenant-Colonel Charles Randolph Kilkelly, C.M.G., late Grenadier Guards, to be House Governor and Medical Superintendent of Osborne as from July 4th last. The First Commissioner of Works, &c., has appointed Dr. Edgar Hoffmeister a member of the consulting staff of Osborne.

Mr. M. F. Ellis, of Northern Nigeria, is mentioned in despatches from Colonel Lugard to the War Office in connexion with the expedition in West Africa. Mr. Ellis was one of the medical staff attached to the expedition.

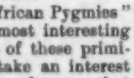
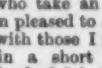
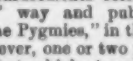
Correspondence.

"Audi alteram partem."

PYGMIES.

To the Editors of THE LANCET.

SIRS,—Dr. G. Elliot Smith's "Notes on African Pygmies" in THE LANCET of August 12th, p. 425, is a most interesting and important contribution to our knowledge of these primitive little "earth men" and for those who take an interest in the origin of the human race, and I am pleased to see that his accurate measurements correspond with those I made in a "superficial" way and published in a short article, "A Study of the Pygmies," in the *Standard* of July 7th last. There are, however, one or two points that Dr. Smith has not touched upon but which, to gain an accurate idea of how much these little people are connected with the development of the human race, it is very important to know.

I have seen it stated that Sir Harry Johnston says these pygmies have no language of their own but all they speak are words that they have derived from surrounding tribes. I cannot agree with this; on the contrary, from an interview I have had with them I came to the conclusion that they have undoubtedly a monosyllabic language (they may also have acquired other words) and that this language was the first language of man, and that other tribes who have the same words have acquired the same from them. The proof of this lies in the old hieroglyphics of Egypt. Take some of the words I have already learnt and deciphered, as, for example[1], *mu a mai* water; *O-le* is *dnb*  to dance or to rejoice; *A-do-da* is *Ā x or z a*  to sleep; *Bacchute* is *baaq*  grain or fruit; *Massouri* is *Matu* good, right, straight, to do well, and many others; but the above are sufficient to show that these pygmies still use the first and oldest words that were to express in articulate form and sound their meaning of things—in what we call language. There is no doubt in my mind that the pygmy was the first man developed from the Pithecanthropos erectus or some form of this; probably the original was nearer allied than the present form of pygmies in London. The remains of this primitive race we find all over the world; from the sources of the Nile they spread north, south, east, and west over the world. The Veddas of Ceylon, the earliest race in Japan that the Anu drove out and exterminated, the earliest race in Australia before the "present aborigines," and the earliest race in Mexico—we find all the same. That these pygmies should have learnt the words and language that they still use from the ancient Egyptians is not conceivable, or could there be any argument to that, except that some remnant of the ancient Egyptians were driven south and had degenerated from a comparatively high state of civilisation to a prognathous type of pygmy and against such an argument their "sacred ceremonies" as they call them—of which their dance is a part—would be conclusive. When I drew the oldest hieroglyphic sign for Amsu they recognised it immediately. (Dr. Smith agrees with all other authorities in stating how readily they recognise picture signs and draw them themselves and at the same time stating that the negroes do not.) All authorities have hitherto stated that they have no religious ceremonies; this is not correct, because when they danced at the Hippodrome in London they took off their ordinary headdress (a bunch of feathers or that to represent the same) and put on the representation of the "Horus lock," also the panther's skin with the tale hanging down behind, and they told me that this was part of their "sacred ceremonies." That they recognise the most ancient sign for Amsu or Horus I (which I drew and asked the chief Bohani if he knew what it was; he smiled and asked one standing by him to tell me; he pointed to his chief and spoke his name—that is him) is very important to Egyptologists and antiquarians, because it is the first sign used by primitive man as the chief or great one and it was used as the sign for the chief of the Nomes and is found depicted on the oldest Australian boomerangs and on the ivory tablets found in the tomb at Naquada, and I have found the same sign in other parts of the world on stones of the neolithic period. This sign, then, would have originated with the pygmies as the sign of their chief or their great one, and as evolution advanced we find that this sign was still used and carried on by the Nilotic negroes and used in the Totemic ceremonies. When the next exodus of men and women took place from this centre (Nile Valley) we find that they still carried and used this sign, but in a higher sense, until in the time of the predynastic Egyptians and the dynastic Egyptians it had then assumed the sign of Amsu or Horis I risen. The oldest god of all in Egypt was Bes , as is well shown in Budge's last book, "The Gods of the Egyptians," vol. ii., p. 286. And no one seeing this and the pygmies, even if he was not an Egyptologist, would fail to identify the two in form, figure, and dress. Bes here has the same type of face as the pygmies. The yellow plume of feathers (*La-gou-ma*) is worn on the head and exchanged for the "Horus lock" during the "sacred ceremonies," the green and yellow "dress" are also worn and the leopard skin with the tail hanging down behind (peculiar to the land of Punt). Bes therefore, who was afterwards represented as a type of Horus, was their "Chief of the Nomes," and it was from these pygmies that the first mythology sprang, and all has been brought on, added to, and made use of in the various types from the earliest myths to astronomical, stellar, lunar, and solar mythology, and finally the eschatology which we know so well. Maspero says: "It [the Land of the Shades beyond Punt] was inhabited by the Dangas, tribes of half savage dwarfs, whose grotesque faces and wild gestures reminded the Egyptians of the god Bes—*none knew better than they the dance of the god—that to which Bes gave way in his merry moments.*" The "Land of the Shades," as Maspero calls it, was the land of the spirits or Khui land; this was first mapped out on the celestial heavens and then in the lakes at the head of the Nile; and the hieroglyphic for the "Khui land," "a region of Amentu," Land of the Spirits or Gods, represented by six triangles with their apices joined and surrounded by concentric circles (three one way and three opposite) is found all over the world—in Australia and North America and in Ireland—and it is a significant fact that when I drew it the pygmies at the Hippodrome recognised it.

Fitzgerald

[1] These words are expressed phonetically, and as one cannot get the proper sound in English French is used.

Marrott also found it on the bodies, tattooed, of the West African negroes who belonged to the secret tribal societies. Dr. Smith noticed, I see, as well as myself, that only the chief was circumcised—an important and interesting fact connected with the "sacred ceremonies." As regards the two women not menstruating during the period they were under observation by Dr. Smith, this may be explained by the fact that one woman was past the climacteric period and the other, Kuarhe, was pregnant.

That the "Bushman" of South Africa is an offshoot and nearly allied to these pygmies is confirmed not only by the steatopygous condition and appearance of the younger woman but by other points—viz., the hair is the same character—"pepper-corns"—the "labium" is the same character in form, the large size of their teeth, their weapons are the same, and many other points. Their "sacred ceremonies" correspond—it is very difficult to get to the original rites of these; we must remember that all native tribes guard most jealously anything pertaining to their sacred ceremonies and often pretend not to understand. Spence and Gillam have proved this perhaps more than any other men in regard to the Australian aborigines. Maspero and other Egyptologists will not find the key to unlock the door of the past until they study and understand the primordial, then only shall they come to the truth, and find the alphabet so plainly written that they will wonder why they did not read what is written so plainly, that man originated in Africa at the sources of, and along the banks of, the Nile. The original, these little pygmies, followed by the Masâbe negro, the Nilotic negro, and an evolution gradually taking place from this centre and various migrations going out to inhabit the world, each exodus carrying with them all that had been learnt up to that time,—when this is understood then the history of the past will become an open book. I have not retraversed Dr. Smith's able article and my own in the *Standard*, as these can be referred to by any of your readers who may feel interested in the subject, one which requires a large volume to set forth all one knows and which I hope to publish soon, as it is nearly completed.

I am, Sirs, yours faithfully,

ALBERT CHURCHWARD, M.D. Brux., M.R.C.P. Edin., M.R.C.S. Eng.

Sept. 2nd, 1905.

P.S.—In line 2 of the hieroglyph paragraph commencing "to dance" "is *Âx* or *za*" should read "is *âxa* or *âza*."

IRRATIONAL TREATMENT OF THE SEVERELY INJURED.

To the Editors of THE LANCET.

SIRS,—It is almost an every-day occurrence to find in the daily press a record of some mishap in which the victim is severely crushed or mangled. The account describes how a medical man was fetched who ordered immediate removal of the patient to the hospital. At the inquest the house surgeon reports that the patient was admitted in a state of collapse, from which he never rallied, and died a few hours later. In these cases the post-mortem examination frequently demonstrates injuries which are not incompatible with survival of the patient. The error of moving a man in a state of collapse a long distance is as frequent as it is inexcusable. If a patient is in a state of collapse the most certain method of diminishing or obliterating any chance he may have of recovery is to move him, often in a jolting, uncovered conveyance, a long distance. His destination, it is true, may be the hospital but that does not alter the fact that a patient, already nearly dead, has had his condition aggravated and his chances of recovery minimised by being unnecessarily moved about.

While it is inadvisable to leave a severely injured man in a gutter or open field, his removal to the nearest place of shelter, usually a distance of only a few yards, is all that is necessary or justifiable. Here, under the influence of stimulants and warmth, he will recover from the shock, if such recovery is compatible with his injuries, and later may, if necessary, be removed to hospital. With the possible exception of cases of internal hæmorrhage or injury to internal organs, conditions which are frequently combined or indistinguishable, the immediate treatment of a severely injured patient can nearly always be summarised, as arrest of hæmorrhage, rest at or near the scene of the accident, warmth, stimulants, and saline solution injected either into the rectum or into a vein or into the subcutaneous tissues, and if pain should be a marked feature hypodermic injection of morphine. A variation of the newspaper account of the inquest is as follows. "The house surgeon stated that the deceased was admitted in a state of collapse, the crushed limbs were at once amputated, but the patient never rallied and died the same evening."

Very few severely injured patients survive the extra shock produced by immediate removal to hospital followed at once by an operation under an anæsthetic. This raises the question of the treatment of accident cases brought while in a state of collapse to a hospital. The fact of a limb being crushed beyond hope of recovery does not justify its immediate removal. The retention for some hours or even a day of a mangled limb will not kill the patient but its removal plus the administration of an anæsthetic while the patient is in a state of collapse is apt to be the proverbial last straw. The immediate treatment of a patient who is brought collapsed to a hospital should, as a rule, be limited to combating the collapse, immediate operation being reserved for cases such as those with internal hæmorrhage which is still active, in which immediate operation is really essential. The removal of mangled portions of a patient who is in a state of collapse may be operative but cannot by the wildest stretch of imagination be justly described as surgical.

I am, Sirs, yours faithfully,

Plymouth, August 29th, 1905. C. HAMILTON WHITEFORD.

THE TECHNIQUE OF THE EXAMINATION OF SPUTUM FOR TUBERCLE BACILLI.

To the Editors of THE LANCET.

SIRS,—I quite agree with Mr. C. G. Higginson in his article upon the subject of the examination of sputum. In all cases where there is expectoration such an examination ought to be as much a part of the routine examination of the case as auscultation or percussion. We are all fallible, but I am sure from cases which have come under my notice that some mistakes which have entailed the most terrible distress might have been avoided if the sputum had been examined. Looking back on my own experience I can quite understand that the objection to this necessary examination, which ought to be undertaken in all such cases before one can make a diagnosis or dare to attempt a prognosis, is that it takes too much time to make and that it is not always convenient to send the sputum to be examined besides costing money. Encouraged by Mr. Higginson's words I venture to describe a technique begun in the Pathological Laboratory at Heidelberg under my revered master the late Professor Arnold and perfected by practice and the helpful hints of other workers. I do so because to many some parts of it may be new, and one very minor detail I believe to be my very own! It has also the advantage of quickness, seeing that by following the routine carefully I can complete the whole investigation, from taking the lid off the sputum pot to seeing the bacilli under the microscope, within ten minutes. Therefore when a patient comes to me coughing and he can give me a piece of phlegm, as patients generally can, I make the examination whilst he (or she) is slowly putting on his clothes and resting a few minutes after the exertion. The presence of the bacilli enables one to speak definitely, whilst their absence merely makes one ask for the first piece of phlegm brought up in the morning, according to the usual rule. That, however, occurs much less often than one would think; more seldom even does one have to reverse the verdict through the discovery of bacilli in the second or even third specimen of phlegm.

In one of my consulting-room windows stands a small table on which are the various instruments and materials for the examination of sputa, blood, and urine. For the examination of the sputum for tubercle bacilli I have: 1. A small microscope with a Zeiss six-millimetre apochromatic objective and a × 10 eyepiece, or a Watson one-sixth of an inch holostigmat objective with the same eyepiece, or a Swift one-eighth of an inch objective with a No. 3 eyepiece. An oil immersion lens takes too much time and is quite unnecessary. 2. Clean glass slips. I use Scrubb's cloudy ammonia to clean them; much depends on this. 3. Thin cover-glasses that have been cleaned by dropping into strong nitric or sulphuric acid, washed in running water and stored in strong alcohol smelling of ammonia. 4. Spirit lamp. 5. Forceps. 6. Scissors. 7. Silk handkerchief and piece of

soft chamois leather. 8. Carbol-fuchsin solution kept in a bottle with rubber cork, in which a small glass filter is fitted kept supplied with filter paper. 9. Löffler's blue in a drop-bottle. 10. Vaseline in a bottle with a rubber cork, with a glass rod thrust through it. 11. Bottle with cedar-oil or Canada balsam dissolved in xylol. 12 Beaker containing clean water. 13. Beaker containing 20 per cent. solution of sulphuric acid. 14. Beaker of clean water. 15. Matches. With these, each in its own place, on the table and the sputum (if in a bottle or freshly coughed up) in a black vulcanite dish such as photographers use for a quarter-plate developing dish before one: 1. Light the spirit lamp and keep the match used. 2. Pick out an opaque piece of sputum with the forceps and sever it from the mass with the scissors. The black dish shows up small opaque spots in the mass of muco-pus and thus saves useless labour in making films in which no bacilli are likely to be present. This point is very necessary to success. 3. Place this in the middle of one glass slip and pressing the surface of the distal third of another slip carefully upon it so as to flatten it well out slowly slide the upper slip off the lower, keeping the surfaces carefully in contact. When this is properly done and if the slips are clean a beautifully thin film will be left across the centre third of the lower slide. As in making blood films this is of great importance and must be learned. 4. Lean the slide up to dry whilst you are (*a*) placing the other slip in a bowl of disinfectant that always stands handy; (*b*) holding the forceps in the flame whilst you count ten slowly; and (*c*) doing ditto with the scissors, afterwards wiping them clean with soft paper that is duly burnt. Should the film not be quite dry (it depends on the state of the atmosphere once you have learned to make a film properly without little excrescences) hold the slide, film side uppermost, six inches above the flame and wave slowly backwards and forwards until the film is dry. 5. Hold the slide, film uppermost, in the flame whilst you count ten slowly. 6. An eighth of an inch from the film on either side of it draw a line with the glass rod dipped in vaseline. This leaves a ridge of vaseline on either side of the film and forms a dam when (7) some carbol-fuchsin solution is dropped through the filter fitted with filter paper. Put on plenty as the vaseline ridges will prevent it running all over the glass slip on to your fingers (it then frightens the patients) and your clothes (it then annoys you). 8. Hold the slide six inches above the flame until the vaseline melts and the stain smokes. The vaseline acts as an indicator and prevents the solution being overheated, which I have proved is bad for staining purposes. 9. Lay the slide thus heated down on the table for four minutes by the watch. Two minutes I have found quite sufficient but let it have four. While waiting take the cover-glass out of the alcohol and polish it with a handkerchief or leather. Lean it up in a fixed spot, for it is sometimes hard to find cover-glasses when their location is changed every time and there is no time to look for it. 10. The four minutes being up dip the slide into the beaker of water, waving it backwards and forwards three times. 11. Dip it into the sulphuric acid solution, doing the same, then back into the water. Now if points of bright colour appear dip it again into the sulphuric acid. In fact, the film must go backwards and forwards between the two beakers until the film has a uniform greyish-pinkish colour. Experience has shown me that there is little danger of decolourising the bacilli with 20 per cent. solution of sulphuric acid unless the slide be kept continuously in that solution over eight minutes, whilst our process ought not to take one minute. 12. Drop Löffler's blue on the film until it is quite covered, then without delay dip the slide into the last beaker of water. I find that half a second is enough to stain and longer makes the blue staining too pronounced. After waving the slide in the water backwards and forwards three times take it out and with the handkerchief wipe the slide dry, removing the vaseline at the same time. 13. Dry off the water with fluffless blotting paper and wave the slide to and fro six inches above the flame. It quickly dries. 14. Drop a tiny drop of cedar oil in the centre of the dry film, lay down the cover-glass upon it, and press gently with the butt end of the match used for lighting the spirit lamp. 15. Place on the stage of the microscope, which you have put in readiness before you whilst the film is finally drying (see 13), focus with the eye to the eye-piece (the proper way and should be learned), and before the tenth minute expires you ought to see (if they be there) dark red rods on a pale blue ground.

The book I always keep handy is Dr. W. d'E. Emery's "Bacteriological Diagnosis." The staining solutions are made from Burroughs and Wellcome's tabloids for the purpose, but the only "Gram" I have been really successful with is Martindale's; from him also I got the bottle with the filter in the cork and vaseline bottle—really for hanging-drop work. I mention these things as so much depends upon the stains and Dr. Emery makes the pursuit a fascinating one. Some may think a Zeiss apochromatic six millimetres with × 10 eyepiece much too weak. I tested the matter by showing my little girl of 11 years a film prepared as above with that magnifying power and she described the little rods on a blue ground exactly the first time.

I am, Sirs, yours faithfully,

D. ANDERSON-BERRY, M.D. Edin., F.R.S. Edin.

St. Leonards-on-Sea, Sept. 1st, 1905.

To the Editors of THE LANCET.

SIRS,—I have read with interest the article by Mr. Higginson on the examination of sputum in THE LANCET of August 26th (p. 600), together with your note on the same and should like to make one or two comments thereon. I find that a very thin film of sputum is of less service than a moderately thick one, especially in those cases where the number of tubercle bacilli is small, as there is more chance of finding them in a thicker layer than in a thin one.

I prepare my films by squeezing a small piece of sputum between two slides as they are more easily handled and less easily broken than cover-slips. Then as regards reagents, I keep them all, except carbol-fuchsin, in short, wide-mouth bottles, so that the slide can be dipped into the solution without troubling to pour any out. This plan was used by the late Dr. A. A. Kanthack and is, I think, cleaner and less wasteful than any other. Where a tap is not available water can be employed in the same manner and frequently changed. I think that the carbol-fuchsin solution wants frequent filtering. I quite agree that decolourising and counter-staining simultaneously is a mistake.

On the whole Mr. Higginson's article should prove of value, because it gives exact details of a process which, though apparently simple, is often a failure from want of knowledge of detail.

I am, Sirs, yours faithfully,

GEORGE A. CRACE-CALVERT.

Vale of Clwyd Sanatorium, Ruthin, North Wales, August 30th, 1905.

PYELONEPHRITIS IN PREGNANCY.

To the Editors of THE LANCET.

SIRS,—I was much interested by the annotation which appeared in THE LANCET of August 26th on the subject of pyelonephritis in pregnancy, my attention being particularly drawn to it by the occurrence of one such case in my practice. The patient, aged 34 years, a primipara, from whom a vesicular mole had been removed one year previously, was delivered by forceps on August 1st of a living child after a somewhat difficult labour owing to pelvic contraction. I sutured a complete tear of the perineum which various circumstances had rendered unavoidable and during the next four days retention necessitated the regular use of the catheter. In spite of strict aseptic precautions a mild cystitis, characterised by hypogastric pain and tenderness and by stale, turbid, faintly acid urine, was noticed. There was no rise in temperature or acceleration of pulse, which both remained normal throughout, and the symptoms promptly yielded to salol, alkalies, and hyoscyamus. On August 24th, four days after the patient had been allowed up, she complained of headache, giddiness, great muscular weakness, and refused food. (Her appetite had hitherto been excellent.) When I saw her she looked weak and tremulous, the face was puffy, and the skin was harsh and dry. The temperature was 102·4° F.; there was severe pain in the left loin radiating down to the hypogastrium, also tenderness on deep palpation. There was no history of shivering. Micturition was frequent; the urine was dark, scanty, acid in reaction, and contained a large trace of albumin. The patient was ordered back to bed, placed on a milk diet, and salol and alkalies were administered. The pain and tenderness soon diminished. The temperature gradually came down, the evening record becoming normal five days later. At the same time the urine increased in quantity, the amount of albumin present

was markedly less, and a careful examination failed to reveal casts or epithelial cells which had been found at the onset.

The renal symptoms noticed on August 24th can scarcely have been due to an ascending infection from the lower urinary apparatus, since the very mild cystitis had cleared up by the eighth day. Moreover, I believe cystitis to be not infrequently connected with wounds of the rectal mucous membrane. Neither can the events be attributed to sepsis, since the rent healed practically by first intention and no untoward symptoms were manifested during the whole course of the case till August 24th. Was the (?) pyelonephritis possibly due to an infection by bacillus coli invading a ureter injured by pressure?

I am, Sirs, yours faithfully,

Goodmayes, Essex, Sept. 2nd, 1905. V. A. CHATELAIN.

A MOTILE ELEMENT RESEMBLING AMŒBA PROTEUS IN THE PRIMARY AND SECONDARY LESIONS OF SYPHILIS.

To the Editors of THE LANCET.

SIRS,—In order to see this element in an active state it is essential that the patient shall not have taken mercury, otherwise the motility, the most distinctive feature of the element, will be inhibited. The observations were made on excised primary chancres and secondary papules.

The chancres and papules are placed immediately after excision (under a general anæsthetic) in sterile normal saline solution. After two hours in this solution scrapings are made with the edge of a sharp knife from the deeper portions of the chancre, the more superficial surface epithelium being first removed and rejected. The deeper or cut surface of the papule is similarly scraped and the scrapings are suspended in a drop of sterile normal saline solution tinted with neutral red. The hanging drop preparation is examined on a cold stage. Small naked masses of protoplasm varying in size, unstained, of a greenish hue, with finely granular contents and without apparent nucleus, will be seen. On watching these, very active movements, such as the putting out of pseudopodia, rapid general alteration in contour and streaming of the protoplasm, will be readily observed. From two to five hours after excision of the syphilitic lesions all movement ceases and cannot be restarted by means of raising the temperature of these elements to 37° C. This is a preliminary communication.

We are, Sirs, yours faithfully,

T. P. BEDDOES, F.R.C.S. Eng.
W. E. DE KORTÉ, M.B. Lond.

The Bacteriological Laboratory, King's College, Sept. 2nd, 1905.

THE HONOUR OF THE MEDICAL PROFESSION.

To the Editors of THE LANCET.

SIRS,—Some time ago my attention was directed to the prospectus of the Bucci Medicine Syndicate, in which I was described as chairman-director. As the use of my name was entirely unauthorised and I had had no previous knowledge of the prospectus and had never had the remotest connexion with the concern I immediately instructed my solicitor, Mr. Sidney Newman, to deal with the question, with the result that two abject apologies were at once tendered by the proprietors of the business and an assurance proffered that the prospectus had been circulated privately only and to a most limited degree and that it had been forthwith entirely withdrawn. Endless inquiries failed to disprove these statements and to this date I have never heard of nor come across a copy of the document referred to except the single copy supplied by my informant.

Though my full identity is given on the circular, I have never in any form received any communication in this connexion. Neither comment nor complaint nor inquiry either from friends or critics has reached me and there is no evidence so far to lead me to suppose that this document has either deceived or injured any member of the public or medical profession, myself excepted. In these circumstances I considered it beneath my dignity to notice the matter in the press and I further felt that the issue of a "disclaimer" on my part, on a matter which the public would readily value at its true worth, might be regarded as superfluous and possibly as a disingenuous attempt to spread my name. I had assumed, I think not unnaturally, that my own honour was in my own keeping and that the medical profession would be safeguarded by the various agencies supported for their protection. The British Medical Association, however, has recently given the subject their attention and expressed the opinion that in the interests both of the medical profession and myself the case constituted a cause for a public disclaimer on my part, though they do not appear themselves to have taken any steps in the matter. Accordingly, with the sanction of this recommendation, I willingly put on record my repudiation of this syndicate both on behalf of the medical profession and myself and beg to ask the indulgence of due publicity.

May I be permitted to add that in the light of the explanations I have offered I do not feel that any apology is due from me for the reticent policy I have adopted.

I am, Sirs, yours faithfully,

DENNIS VINRACE.

South Kensington, S.W., August 24th, 1905.

INEBRIETY A DISEASE AND THEREFORE TO BE TREATED BY THE MEDICAL PROFESSION.

To the Editors of THE LANCET.

SIRS,—I have read with interest Mr. W. McAdam Eccles's letter in THE LANCET of August 26th, p. 628, and hail with delight the hope which he holds forth that for the future inebriety will be treated as a disease by those capable of dealing with it. I do not think that blame for the old and bad method of dealing with drunkards has been entirely due to the "clerical satellites" of quacks, as Mr. Eccles seems to suggest. As a member of the clerical profession I for one have felt for years past that we were dealing with a very serious problem in a very flippant and ineffective manner; I do not believe, I repeat, that the clergy should bear the whole brunt of the blame. Medical men themselves have held aloof from a preventive and curative work in which they should have been foremost, and I feel convinced that if any real advance is to be made in curing patients suffering from the disease of intemperance it will be made only on scientific lines by persons scientifically trained.

I am, Sirs, yours faithfully,

RICHARD FREE.

St. Cuthbert's Lodge, Millwall, E., August 31st, 1905.

ACIDURIA AND DEATH FOLLOWING THE ADMINISTRATION OF AN ANÆSTHETIC.

To the Editors of THE LANCET.

SIRS,—The two main facts noted in death following the administration of an anæsthetic appear to be the presence of a fatty liver and acetone in the urine. The question appears to have arisen whether the fat in the liver precedes or follows the administration of the anæsthetic. Dr. Leonard G. Guthrie considers that it precedes the administration and my pathological experience would lead me to believe that his view is the more likely to be correct. A liver considerably enlarged owing to the presence of fat is not uncommonly seen in children after death and is most frequently associated with some condition of sepsis. In such cases the amount of fat present may be very great, though it may be remarked that it is by no means in every case of septicæmia that there is a distinctly fatty liver, nor is it necessarily in the most intense septicæmia that there will be the most fat. It may be interesting to mention that only recently I made a post-mortem examination where it seemed to me that a typical example of a fatty liver occurring in a child was secondary to septic absorption from an abscess in the neck. Not until some hours after having completed the examination did I learn that 24 hours before death the child had been given an anæsthetic. Although I believe that a great excess of fat may appear in the liver very rapidly, it seems to me to be highly improbable that this liver, which extended three inches below the costal margin, had attained its abnormal size in the 24 hours of life which followed the administration of an anæsthetic.

The second point of interest that has been noticed

in these cases of delayed death after an anæsthetic is the presence of acetone in the urine, and associated with this condition of the urine one of the most striking symptoms is vomiting. Acetonuria is, it is needless to say, a marked feature of the cases known as "recurrent vomiting" in children. Severe cases of this affection are not very often met with, but milder examples, which Dr. Guthrie speaks of under the popular name of "bilious attacks," are common. It does not seem to me, however, that a fatty liver is necessarily associated with acetonuria and recurrent vomiting in children. Fatal instances of this affection are rare but it has fallen to my lot to perform the necropsy on a case where death occurred. The urine contained acetone but although I did not examine the liver microscopically it was certainly not what could be called a fatty liver. It was not in any degree enlarged and presented no abnormal appearances to the naked eye. But even if it be allowed that microscopical examination may have shown in this case some excess of fat in the liver it seems to me to be difficult to believe that fat in the liver can have anything to do with a disease which lasts for years, as does recurrent vomiting. Not only does it seem to me to be very doubtful whether a fatty liver can play a part in the causation of acetonuria associated with recurrent vomiting, but the question arises whether it is an important factor in the causation of acetonuria, vomiting, and death after the administration of an anæsthetic. That a well-marked fatty liver may be present it is impossible to deny. I have already mentioned a case that has come under my own notice but before great stress is laid upon the presence of a fatty liver one must be sure that in virtually every fatal case the amount of fat in the liver is really definitely above what is commonly present.

I am, Sirs, yours faithfully,

Sept. 3rd, 1905. THEODORE FISHER.

THE SPA TREATMENT OF CIRCULATORY DISORDERS.

To the Editors of THE LANCET.

SIRS,—In his paper on the Spa Treatment of Circulatory Disorders in THE LANCET of August 5th, Dr. L. Williams gives many valuable hints as to the pathology and treatment of these affections but bases his verdict on Nauheim in special on wrong views regarding its climate, the physiological action of its springs, and the methods of treatment used there. I hope to conduce to a correct understanding of the facts by the following statements.

1. *Climate.*—From the end of May till the end of June and September again are the finest times of the season, which lasts from May 1st to Oct. 1st. During these months the temperature is equable, neither excessively hot nor disagreeably cool. September, more especially, is by no means rainy, as Dr. Williams believes, but, on the contrary, is noted for the constancy of fine weather which, in conjunction with the bracing qualities of the air peculiar in these latitudes at the end of summer and beginning of autumn, perhaps renders this month climatically the most invigorating one of the whole year. July and August have hot days here as everywhere in these latitudes but the proximity of the Taunus hills and the prevalence of easterly winds render the nights agreeably cool even then, and rarely does a spell of hot weather last more than a few days without being relieved by a change of weather; these "sudden and decided changes" are a distinct advantage then at this time of the year, whilst at others they are no more pronounced than anywhere else.

2. *Physiological action.*—The theory that the carbonic acid brine baths chiefly act by stimulating the heart to more energetic contractions and increasing blood pressure is antiquated and has been replaced by the theory that the action is chiefly due to lessening of peripheral resistances in the vessels. The fact is that in high blood pressure this is generally lowered by the baths, whilst only cases of abnormally low pressure and loss of arterial tension experience an increase of blood pressure and of vascular tension through the baths. To explain this monistically I have advanced the following theory: As is known, the action of the baths is twofold—(1) local, consisting in dilatation of the capillaries of the skin; this means decrease of peripheral resistance; (2) reflex by stimulation of the cutaneous sensory nerves, the stimulus acting on the centres of the vaso-motor and pneumogastric nerves; this brings about increase of arterial tension with consequent rise of blood pressure and slowing of the heart's action (stimulation of the vagus). In cardiac disorders, however, the diminished velocity of the current of the blood leads to an accumulation of carbonic acid gas in the blood; this, we know from physiology, stimulates the vaso-motor centres in the medulla and brings about arterio-spasm; hence in so many cardiac cases we meet with an excessively high blood pressure. Further, we know from physiology that the velocity of the circulation is the greater in a given section of the vascular system the greater the propulsive power at the beginning of the said section, and the less the resistance at its end be; the capillary dilatation reduces this resistance, thus accelerating the circulation. The acceleration leads to the elimination of the accumulated carbonic acid; this being eliminated the abnormal stimulus on the vaso-motor centre is abolished and consequently blood pressure falls in these cases. The stimulating action of the baths on the vaso-motor system therefore only comes into action so far as to increase an abnormally low tonus towards normal, but not beyond this. And practically this theory is corroborated by our seeing good results from the Nauheim baths in cases of high blood pressure as well as in cases of low blood pressure. The chief effect is to relieve the heart (1) by capillary dilatation in all cases; and (2) by removing arterial spasm in cases where it exists. There is no physiological basis for assuming that the heart is stimulated itself actively to more vigorous contractions. Even the re-establishment of lost arterial tone would not act as a stimulus but as a relief to the heart, because in normal tone the elasticity of the arterial walls constitutes an important driving power and thus the vessels resume their share in propelling the blood which during the stage of lost tension had devolved upon the heart. Only the temperature, therefore, in cool baths throws an initial strain upon the heart and stimulates it to stronger contractions by bringing about contraction of the cutaneous capillaries; but this we entirely command by regulating the temperature at will. Stimulation of the vagus reduces frequency *and force* of the systoles; that of the accelerans cordis increases both. Both centres can be stimulated through reflex from sensitive nerves; but if both be stimulated simultaneously the action of the *vagus prevails*. Digitalis causes slower *and stronger* beats; this latter, therefore can only be due to direct action on the *intra*-cardiac centres, which is all the more probable, as we know that these are the predominating factors in regulating the heart's action. Such action on the cardiac muscle, however, can only be possible either by a chemical substance contained in the blood (as is the case with digitalis) or *perhaps* by electrical stimulation, but not by a stimulus only applied to the surface of the body.

3. "THE *Nauheim method.*"—Baths and exercises, it is true, were originally the only method known at Nauheim of treating cardiac disease. But "tempora mutantur nos et mutamur in illis." There are upwards of 50 physicians now practising at Nauheim, and it would not seem quite illogical to conclude that some of them had the capacity of treating patients on their own lines and of evolving original methods other than those exclusively in vogue formerly. The action of hydro-electrical baths on the circulation was established beyond all doubt as far back as 1883 by Eulenburg by *exact* research and since then by others. I may say that my own recent investigations have led, in conjunction with the light thrown on the subject by former work, preliminarily at least, to an exact definition of the action of baths with the faradic or sinusoidal alternating current on the circulation. Without any doubt they have the following influences: (1) stimulation of the cutaneous sensory nerves with effect on arterial tone; (2) acceleration of the circulation by rhythmic contractions of the systemic muscles; (3) potent effects on metabolism; and (4) a beneficial effect on the general nervous system. Besides these, the baths have *possibly* a direct action on the vessels and the heart, as they undoubtedly have on other internal organs (intestines, uterus, and bladder).

It would go beyond the scope of a letter to adduce all the physiological facts and practical experiences which help to show that a combination of hydro-electrical methods with the Nauheim baths is *the best* physical treatment for circulatory disorders at the present day, but as this combination took its origin at Nauheim I protest against the "baths and exercises" henceforth being called *the* Nauheim method unless some qualifying words be added. With regard to the exercises, I am, with Professor A. Hoffmann, of

opinion that in combination with the baths they are generally contra-indicated.

A word about the Nauheim treatment at other places. There is, of course, no doubt about the possibility of it, but the fact that many different spas on the continent, as well as in England, are making energetic endeavours to gain a reputation in these methods goes to prove the efficacy of them if *judiciously* applied. It should not be forgotten that the different qualities of the Nauheim waters and the balneological technique are necessary to insure the effects. Physical treatment of cardiac disease, whether by mineral baths, by exercises, or by hydro-electrotherapy, or by any combination of these, is, I quite agree with Dr. Williams, not followed by miraculous results, and is in general only indicated in initial stages.

I am, Sirs, yours faithfully,

PAUL C. FRANZE, M.D.

The Electrological and Radiological Institute, Bad Nauheim (Germany), August 29th, 1905.

RHEUMATISM AND CLIMATE: A QUERY.

To the Editors of THE LANCET.

SIRS,—I shall be grateful if any of your readers will kindly help me with advice. I have been engaged in wide and wild country practice for the last 14 years and have lately suffered more or less from rheumatism and have also been laid up with lumbago and sciatica. The least wetting or even a long tiring day causes slight recurrence of the trouble. I am at present in a damp climate with clay subsoil in the North of England and am afraid I shall have to make a change. For various reasons I require a bracing place and am fond of seaside or health resort practice. I am middle aged. I shall be very glad of suggestions as to the most suitable districts in which to look for a practice where I may have reasonable hope of escaping an insidious foe and at the same time making a living.

I am, Sirs, yours faithfully,

August 29th, 1905. PRACTITIONER.

THE METROPOLITAN ASYLUMS BOARD AND ITS ASSISTANT MEDICAL OFFICERS.

To the Editors of THE LANCET.

SIRS,—We thank Mr. Scovell for his prompt reply to our letter which appeared in THE LANCET of August 26th and are pleased to note that he considered the question one of sufficient importance to occupy the early attention of the Board. From the opinions which he has expressed we are forced to believe that the Board can neither be fully acquainted with the position of its medical officers nor with the working of the rules by which its institutions are governed. We trust that a thorough inquiry will place these matters in a true light, and until such inquiry has been made the object of our resigning will not have been attained and the position of the assistant medical officers under the Metropolitan Asylums Board will continue to be an extremely unsatisfactory one.

We are, Sirs, yours faithfully,

FRANCIS R. BARWELL.
GERARD A. HERKLOTS.
H. P. KENNARD.

Darenth Asylum, Dartford, Kent, Sept. 5th, 1905.

NEW HOSPITAL FOR THE ROYAL CORNWALL SAILORS' HOME AT FALMOUTH.—A few years ago Sir Joseph Fayrer and other members of the medical profession urged on the subscribers of the Royal Cornwall Sailors' Home at Falmouth the necessity of providing a new hospital for that institution. The old building has been in existence about 50 years and it was quite impossible to bring it up to modern requirements. It was consequently decided to erect a new hospital and subscriptions were invited for that purpose. On August 24th Vice-Admiral Sir Lewis Beaumont, commanding Plymouth naval station, laid the foundation stone of the new building in the presence of a large assembly. The hospital will stand in a large garden and will consist of a men's ward for six beds, with two small wards for one bed and two beds respectively. The building will also contain an operating theatre, convalescent ward, nurses' rooms, and the usual offices. The estimated cost is £2500, of which about £1300 are still required.

THE SALE OR PURCHASE OF A MEDICAL PRACTICE.

(FROM A LEGAL CONTRIBUTOR.)

ALTHOUGH in the majority of instances the sale or purchase of a medical practice is a plain and straightforward transaction, cases sometimes occur which tend to put the young practitioner who is unfamiliar with the ways of the world upon his guard. Moreover, even in cases where everything is fair and above board, one who is unaccustomed to the perusal of legal documents may set his hand to some deed of which he does not understand the true meaning. In these circumstances it is apprehended that our readers may value a few notes upon the subject of agreements for the sale and purchase of a medical practice.

Advantages of an agreement in writing.—If a practice is to be sold the terms of the sale should be reduced into writing and the agreement executed with the least possible delay. In the case of May *v.* Thomson ((1882) 20 Ch. D. 705), the plaintiff, who wished to sell a medical practice with the lease of the house where it was carried on, placed it on the books of a medical agent. This led to negotiations with the defendant. The premiums asked for the practice and for the lease were stated in a letter from the agent to the defendant, but no time for completing the purchase was mentioned. The defendant replied in a letter to the agent accepting the terms offered and adding that he should be ready to pay the deposit money "on receipt of corrected agreement," and at the same time he wrote to the plaintiff personally, also accepting the terms offered and adding—"I shall trust you to give me the best introduction you can during three months and afterwards if necessary." The plaintiff replied thanking the defendant for acceding to his terms and saying that "it would be his aim as well as his duty to give him an effectual introduction to his patients." A formal agreement was drawn up and never signed, and after some further correspondence the defendant refused to complete the purchase. Upon an action being brought by the vendor to obtain an order for specific performance, the Court of Appeal held that inasmuch as the time for the commencement of the purchase was left uncertain and the stipulation as to three months' introduction was not agreed to, and as the parties contemplated a formal agreement, there was no binding contract between the parties and the action was dismissed.

Perhaps the most satisfactory method of explaining the incidents of a regular transfer of a medical practice is to set out the clauses of a form of agreement which may be signed by the vendor and purchaser, adding such explanatory notes as appear to be necessary. Certain observations of a general nature may first be made.

Ascertainment of the price.—The all-important question, What price is to be paid? must first be satisfactorily determined. The vendor will naturally seek to enhance the value of the practice while the purchaser will seek to decry it, and the basis of agreement will probably be the books which have been kept by the vendor. Both vendor and purchaser should exercise the utmost caution in the use of these books; the vendor because if it should transpire that the books are in any way misleading, or that there has been any *suppressio veri* in connexion with them, unpleasant consequences may follow, and the purchaser because books of account though honestly and accurately kept may nevertheless mislead a person who does not properly understand them.

Let us take for the sake of illustration an extreme case. Suppose the vendor were to produce books which showed gross receipts of £1000 a year for two or three years and the purchaser, relying upon the books, gave a sum of £2000 for the practice and afterwards discovered that the books had been "faked" for the purpose of enhancing the apparent value of the practice. In such a case the whole transaction might be set aside on the ground of fraud. Where, however, the books are honestly kept and the purchaser has been content to rely upon the figures contained in them in arriving at the conclusion that a fair price has been asked, he cannot be heard to complain if he is disappointed with the takings of the practice. For instance, supposing a large part of the takings which were entered in the books were derived from two or three wealthy patients. Suppose these patients had left the district before the sale of the transfer. It is an open question whether the vendor should have disclosed this

fact; a right-minded vendor would assuredly do so. Nevertheless the careful purchaser ought to make inquiry with regard to them, for it must not be forgotten that the maxim *caveat emptor* applies to the sale of a practice just as it applies to the sale of wares and merchandise. We have mentioned one pitfall for the unwary; there are many others which may escape the notice of a man who is unaccustomed to books of account. The best advice that can be given is to recommend a would-be purchaser to employ an accountant who is skilled in such matters to audit the books.

Dealings with agents.—The vendor of a practice will usually employ an agent to procure him a purchaser upon the terms that the agent shall have a commission on the purchase price. A few observations as to the rights of an agent may here be made. Commission is payable when the transaction in respect of which it is claimed is a direct though not necessarily an immediate result of the agency (Bowstead's "Law of Principal and Agent," p. 177). So if a practitioner employs an agent to sell his practice, and before the agent introduces a purchaser the practitioner sells the practice by private treaty with a friend, the agent cannot have a commission. But an agent is entitled to his commission if he indirectly introduce a purchaser, as where, for instance, the purchaser gets to know of the practice being for sale through seeing an advertisement inserted in a newspaper by the agent. The agent is also entitled to commission if he introduces a purchaser and the purchaser subsequently goes off through no fault on the part of the agent. So if a practitioner decides to sell his practice and an agent introduces a purchaser who is willing to pay the vendor's price and the vendor then decides not to go further in the matter, in that case the agent is entitled to his commission.

Sale or lease of practitioner's house together with the practice.—In most cases where a practice changes hands the purchaser takes over the vendor's house either by way of purchase or by a lease for years. The fact that there is an agreement to buy or to take a lease is generally referred to in the agreement for the sale of the practice, but the conveyance or indenture of lease should be drawn up in a separate document to be executed at or about the time of the execution of the deed which transfers the practice. It is not proposed to consider the essential terms of a conveyance or lease in this article.

Agreement for the transfer of a practice.—The following are some of the more important clauses which (or variations of which) usually find their way into an agreement between the vendor and purchaser of a practice. Some of the clauses are taken from the Encyclopædia of Forms and Precedents (London: Butterworth and Co.) and others from "The Law of Medical Partnerships, &c." (1895), by Barnard and Stocker. In both of these publications complete forms will be found.

An agreement made the day of 1905. Between A. B. of No. 19, Raidfern Gardens, in the Borough of Kensington, in the County of London (hereinafter called the vendor), of the one part, and C. D. (hereinafter called the purchaser) of the other part. WHEREAS the vendor has for many years past carried on the profession or practice of a surgeon and apothecary at No. 19, Raidfern Gardens aforesaid and is desirous of disposing of the same and of the goodwill thereof. And WHEREAS the purchaser is desirous of purchasing the same at or for the price and upon the terms hereinafter mentioned. Now this Indenture witnesseth as follows.

If the purchaser is going to take over the house and surgery as well, either by way of purchase out-and-out or on lease from the vendor, mention is generally made of this fact in an additional recital.

1. *Vendor to make alterations:* The vendor shall within twelve calendar months from the sale hereof carry out and completely finish to the satisfaction of the purchaser the alterations specified in the schedule hereto to all that house and messuage known as No. 19, Raidfern Gardens, in the Borough of Kensington, in the County of London, now occupied by the vendor, according to plans and specifications which have already been prepared and have been signed by the vendor and purchaser respectively. The vendor shall also before the day of put the said messuage and the outbuildings belonging thereto into thorough decorative repair to the satisfaction of the vendor.

The period of 12 months referred to in the foregoing paragraph is the period during which, by a covenant to which I shall presently refer, the vendor undertakes to give the purchaser an introduction to the practice. The repairing covenant above set out may be inserted in this agreement although the premises are sold or leased to the purchaser by a separate instrument.

2. *Sale of goodwill.*—The vendor shall sell and the purchaser shall buy the goodwill and interest of the vendor in the practice of a general medical practitioner heretofore carried on by the vendor at No. 19, Raidfern Gardens aforesaid and neighbourhood at the price of £ one half of which shall be paid on the day of and the balance thereof on the day of on which day the purchase shall be completed. [Provided always and it is hereby agreed and declared that nothing in these presents shall have effect to transfer to the purchaser any interest of the vendor in the appointment which he now holds as medical officer to the workhouse [or the friendly society], and provided further that nothing herein contained shall operate to prevent the vendor acting in pursuance of and receiving the emoluments attached to the said appointment.]

2 (a). *Sale of Goodwill (alternative form of clause).*—In consideration of the sum of £ as to £ part thereof now paid to the vendor by the purchaser by way of deposit and part payment of the purchase money of the said practice (the receipt of which sum of £ the vendor doth hereby acknowledge) and as to £ the residue thereof to be secured and paid in the manner and at the times hereinafter mentioned, the vendor shall assign to the purchaser as from the day of [*here insert day of commencement of introduction*] all the goodwill and professional connexion of the vendor of and in the said practice now carried on by the vendor in and around No. 19, Raidfern Gardens aforesaid and shall render to the purchaser as far as possible all the patients and customers of the said practice and the purchaser shall buy and acquire the same upon the terms herein mentioned.

Where there are appointments attached to the practice it is well that they should be specifically referred to in the agreement. The vendor cannot guarantee that the purchaser shall receive such appointments if the purchaser resigns them, and the vendor may desire to keep some of them in his own hands. Any special arrangement with regard to them should be particularly mentioned in the agreement. With regard to the purchase money it is often more convenient to the purchaser to pay it by instalments. In that case the dates of each individual payment should be specially referred to in the agreement. The form which is now being discussed would only be suitable for the purposes of transferring a practice out and out; it would not be applicable to the taking in of a new partner. An arrangement of that kind would have to be embodied in a very different document.

3. *Assistance and introduction by the vendor.*—As from the date hereof the said practice shall be carried on by the purchaser for his own benefit but in and during a period of *twelve* months from the date hereof the vendor shall assist the purchaser in carrying on such practice [and shall use his best endeavours to secure for the purchaser the appointment of medical officer to the] and shall introduce the purchaser to all the vendor's patients and do all in his power to procure the full benefit of the said practice for the purchaser and to insure his success in carrying on and extending the same.

3 (a). *Covenant to introduce purchaser.*—The vendor shall continue to reside at No. 19, Raidfern Gardens aforesaid from to which period is called the period of introduction, and shall actively assist the purchaser in the conduct of the practice and so far as may be possible and consistent with professional etiquette shall introduce the purchaser to and endeavour to the utmost of the vendor's ability to secure for the purchaser the custom of all such persons as are or have been patients in connexion with the said practice and are still residing in or near No. 19, Raidfern Gardens as aforesaid, and the vendor shall use his best endeavours to secure for the purchaser all the public and other medical appointments which the vendor now holds [with the exception hereinbefore mentioned] and which are, with the estimated annual value of each such appointment, specified in the schedule hereto, and the vendor shall be at liberty to absent himself from the work at the said practice and from 19, Raidfern Gardens for a portion of the period of introduction not exceeding consecutive days at any time and not exceeding weeks in the aggregate.

Inasmuch as the transfer of the goodwill takes place as from the date of the agreement, any debts due to the practice collected after that date shall belong to the purchaser. So much depends upon the introduction which the vendor gives that a clause is sometimes inserted for the protection of the purchaser if the vendor fails to give a proper introduction. Sometimes a purchaser is given an option to terminate the time of introduction by some such clause as the following:—"Provided always that the purchaser shall have the option of terminating the period of introduction at any time on or after the day of on giving the vendor weeks notice in writing of his desire to terminate it."

4. *Remuneration for assistance.*—As remuneration for such assistance the purchaser shall pay to the vendor half the net profits derived from the said practice (after deducting all outgoings and expenses in respect of work done) during the said period of twelve months.

The term "outgoings" will include the rent of the house and taxes, the cost of purchasing drugs and instruments to be used in the practice, the wages of servants employed in the practice, and the cost of up-keep of horses, carriages, and motors.

5. *Deduction from purchase price if appointment not obtained.*—If the appointments referred to in paragraph 2 (a) or 3 hereof shall not be secured for the purchaser within the said period of twelve months the purchaser shall be at liberty to deduct from the balance of the said purchase money an amount equal to double the annual salary now paid in respect of such appointment.

If the purchase price has been calculated upon the basis that certain appointments shall go with the practice and it

turns out that the vendor is unable to secure the reversion of these appointments to the purchaser it is only fair that the purchase price should be reduced.

6. *Restrictive covenant.*—The vendor shall not except as aforesaid practise as a physician, surgeon, accoucheur, or general practitioner (unless where he shall be *bona fide* called in to consultation by some other medical man) or as assistant to any medical practitioner within ten miles of No. 19, Baldfern Gardens (or attend any of his past or present patients) for ten years as from the date of these presents.

6 (*a*). *Restrictive covenant (another form).*—If the purchaser shall duly perform and observe the stipulations of these presents on his part to be performed and observed the vendor shall not at any time for the space of years after the commencement of the period of introduction, except as herein previously provided, exercise or carry on or be directly interested in exercising or carrying on upon his own account or in partnership with or as assistant to any other person the practice, profession, or business of physician, surgeon, accoucheur, or apothecary at any place within miles of No. 19, Baldfern Gardens, and if the vendor shall so practise within the limits aforesaid or in any way violate this provision he shall pay to the purchaser the sum [of £] (or of £ for every month or part of a month during which he shall violate this provision] as ascertained and liquidated damages and not by way of penalty.

The restrictive covenant is one of the most important in the agreement between the vendor and purchaser of a practice. Without such a covenant being capable of enforcement it would be idle for any man to buy a practice. It must, however, be drawn with some care, for it involves a contract which is in restraint of trade and is therefore contrary to law, unless its terms are such as to be reasonably necessary for the protection of the purchaser without depriving the vendor of his means of livelihood altogether. For instance, if a medical practitioner were to enter into an agreement which prevented him practising anywhere for the rest of his life, no court would compel him to carry out the agreement. So long, however, as the covenant is limited either as to time or space it will be enforced. For instance, a general practitioner in London could not interfere with a Liverpool practitioner, nor could an Irish practice compete with an English practice. It would, however, be reasonable in the case of a sale of a London practice to ask the vendor not to practise within ten miles of the house or within the county of London for a period of ten years. The following rule, which was laid down in the case of Horner *v.* Graves (7 Bing. 735), should be borne in mind: "The restraint must be only such as to afford a fair protection to the interests of the party in favour of whom it is given, and not so large as to interfere with the interests of the public."

The covenant, as expressed in our model clauses, is fairly wide, but questions do sometimes arise as to what constitutes "practising" within the proscribed limit. It would clearly be a breach of the bare covenant "not to practise" to enter into partnership with, or become assistant to, another practitioner. The latter point was decided in the case of Palmer *v.* Mallett ((1887) 36 Ch. D. 40). Assuming there is no proviso to the effect that *bond-fide* consulting practice shall be allowable it is difficult to say whether that class of practice would be regarded as a breach of the general covenant "not to practise." It is clearly safer to insert a special provision relating to consulting practice, for if it is not inserted and the purchaser desired to enforce his strict right it is apprehended that consulting practice might be prohibited. It will be noticed that in Clause 5 the words "or attend any of his past or present patients" are put in brackets. If these words are omitted there will be nothing to prevent the vendor seeing a former patient at some place outside the proscribed area.

7. *Collection of book debts.*—The purchaser shall be at liberty if he thinks fit to collect on behalf of the vendor all outstanding book debts in respect of the said practice up to the date hereof and the vendor shall not within calendar months from the date hereof commence legal or other proceedings for the recovery of any such debts.

Before the purchaser could sue a patient who owed money to the vendor it would be necessary for the vendor to give notice to the patient that he had assigned the debt in question. There need be no formality about this assignment.

8. *Discharge of book debts.*—The vendor shall pay and discharge all debts and liabilities in relation to the said practice subsisting on the day of , and the vendor shall pay and discharge all debts and liabilities which have accrued or been incurred since that date and mutual indemnities shall be given in respect thereof.

Suppose, for instance, the vendor had ordered certain drugs a month before the date of the agreement and the price of these drugs was still due and owing. The above clause would compel the vendor to pay the amount so due. In the absence of a clause in some such form as the above the purchaser might conceivably be held liable at the suit of the person who supplied the drugs.

9. *Books of account to be handed to the purchaser.*—The vendor shall hand over to the purchaser on the termination of period of introduction all the books of account relating to the said practice and such books shall become the property of the purchaser, but he shall permit the vendor, his solicitors, or agents to have access thereto at all reasonable times and to have the temporary use thereof at the purchaser's surgery or at any other place where the vendor may require the production of the same for the purpose of getting in the vendor's outstanding accounts.

10. *Drugs, &c.*—The purchase money hereinbefore mentioned shall include all such bottles, drugs, surgery fixtures, furnishing, and appliances (not being surgical instruments) as shall belong to the vendor and be used for the purposes of the said practice at the date last mentioned and shall not be expended during the period of introduction hereinafter mentioned.

11. *Execution of assignments.*—The vendor shall, if and when called upon by the purchaser, execute all proper assignments and other deeds for carrying this agreement into effect.

The assignments above referred to include the assignments of book debts which will enable a purchaser to sue for their recovery.

STAMPING OUT CONSUMPTION: WHAT THE POST OFFICE HAS DONE IN TEN YEARS.

(FROM A CORRESPONDENT.)

SHOULD there be any doubt in the minds of workmen or their employers as to the possibility of stamping out the disease of consumption from any body of persons in whatever trade by adopting the methods recommended by modern science, that doubt ought to be for ever set at rest by a consideration of the following interesting little table compiled from the Postmaster-General's reports for the last ten years. Time was when the Post Office gave no space to the health of its employés in the annual blue book, but for the past ten years some five or six pages of tables and comments have been included. Contemporaneously with this, and indeed for some years prior to the commencement of this publication, there had been a deal of criticism, necessarily not supported by accurate figures, of the loss from a preventable disease, in such an easily controlled and specially selected community. This at length awakened the postal medical department to its duty in the matter and the figures compiled below will show with what excellent results.

The following table is compiled from figures extracted from the Postmaster-General's Report for the year indicated and shows the loss from tuberculous disease among officers under the care of the official medical officer, as recorded in the reports for the years mentioned.

Year.	Staff.	Deaths.	Retirements.	Total.	Loss per 1000 living.
1896 ...	62,852	86	67	153	2·4
1897 ...	76,866	72	80	152	1·9
1898 ...	79,121	70	87	157	1·9
1899 ...	82,172	62	83	145	1·8
1900 ...	84,305	58	85	143	1·6
1901 ...	87,242	61	93	154	1·7
1902 ...	91,402	53	119	172	1·8
1903 ...	96,862	52	82	134	1·3
1904 ...	100,762	60	119	179	1·7
1905 ...	116,541	78	128	206	1·7

The first thing that strikes us in glancing at this table is the remarkable decrease in the total loss, which represents, when taken over the 100,000 odd of the staff, a saving of a very large number of lives per annum. Perhaps, however, the cases of retirement do not now so certainly indicate imminent decease as they did ten years ago. For if we look again at the table we shall see a remarkable change in the relation between the number of retirements and the number of deaths. Whereas in 1896 the deaths exceeded by 19 the number of retirements, we notice that for all the remaining years the retirements exceed the deaths, the ratio of excess increasing as the years proceed. This is obviously the result of a deliberate policy to remove the infected persons from the service before death, and does indeed indicate that the employés tainted with consumption are now pensioned in the earlier stages. This policy has two excellent results: it gives the sufferer a better chance of the arrest of his disease and it removes a source of infection from the other employés. The ultimate and beneficent result

is the diminution of the total loss as indicated in the final column.

But certain accessory agents have also been operating. First, there has been a good deal of educational literature circulated among the men and women which has resulted in a better appreciation of the value of fresh air, temperance, exercise, and absolute and minute cleanliness in all things. This was especially the case during and after the meeting of the great International Congress in London in 1901. In this year (October, 1901) the Postmaster-General issued, somewhat tardily it must be confessed, a prohibition against spitting. This was followed in 1903 by a lengthy instruction to all his administrative officers as to the proper methods of cleaning and ventilating the offices. Dry dusting was abolished and dry sweeping forbidden. A little later (1904) an exceedingly interesting circular setting forth the conditions of tuberculous infection, the means of prevention, and giving advice to sufferers how to act so that they should not be a danger to others, was printed on foolscap cards and hung in every office. All the new buildings now being erected and all the recently erected ones have been designed with a view to considering these things in the light of the modern knowledge of the disease. The net result has been a reduction of the total loss amounting in some years to nearly 50 per cent.

Such a result is exceedingly gratifying. It is satisfactory to those who first started the agitation for reform in 1895, it is satisfactory to the medical department that yielded to the representations, and it must be exceedingly satisfactory to the Postmaster-General himself. For, in addition to the good which accrues to his own department, he will have the satisfaction of feeling that his department has given a practical demonstration of the effectiveness of preventive measures that should do much to stimulate other large employers of labour and public bodies to do the same. It should also stimulate Lord Stanley to persist in the good work until pulmonary phthisis is as rare in the Post Office as small-pox. Eminent medical men have expressed the opinion that the disease can be practically eradicated from the Post Office. If so it should be done. The movement now afoot for the provision of a postal sanatorium should assist greatly in bringing about this desirable result.

HOMBURG.

THE PROBLEM OF MINERAL WATER HEALTH RESORTS.—WHAT SHOULD, AND WHAT DOES, DETERMINE THEIR POPULARITY.

(FROM OUR SPECIAL SANITARY COMMISSIONER)

PART III.[1]

THE HOMBURG OF THE FUTURE: THE MEDICAL POSSIBILITIES.—THE NEW SPRING.—THE NEW BATHS AND METHODS.—DIET IN THE HOTELS.—EVER-INCREASING FACILITIES FOR THE TREATMENT OF PATIENTS.

Homburg, August, 1905.

As may be gathered from what has already been said, the future of Homburg depends on the manner in which its medical resources are appreciated and rendered available to an ever-increasing number of patients. These advantages have been multiplied notably of late years. The sanitation of the town, as already described, has now been brought up to a high standard of excellence. The efficacy and the usefulness of the waters in the treatment of disease were always admitted by those who were capable of forming an opinion on such a subject. But even in this respect there has been a recent startling and important improvement. Some years ago it was proposed to let a considerable part of the grounds in the park, which is between the Kurhaus and the mineral wells, to the golf club. The architect and antiquarian, Professor L. Jacobi, however, objected. He did not object to golf, but he insisted that the town should reserve the right to dig for water on the grounds, for there was historical evidence to show that the Romans had a valuable well on this site. Consequently a clause to this effect was introduced in the lease of the grounds to the golf club. A few years later the benefits derived from bathing in the mineral waters being more and more appreciated it became necessary to increase the supply of water. Thereupon it was decided to bore on the historical spot. Nothing was known as to the quality of the water likely to be obtained; it was only known that it had been used by the Romans for making salt. After digging to a considerable depth not only was mineral water obtained but it proved to be richer in its mineral constituents than any of the other wells in use. Whereas the most popular water—that of the Elisabeth spring—contains 11·032 grammes of salts in 1000 grammes of water, the new spring contained 14·269. The advantage of the new spring, which in reality is so old a spring that it had fallen into disuse, is that a smaller quantity of water will produce the same effect. Thus, for instance, roughly speaking, it will suffice to take two glasses of the Landgrafenbrunnen, the name given to the new spring, instead of three glasses of the Elisabethenbrunnen. There are consequently less gas absorbed, less distension, and less work for the heart. As it contains a larger quantity of magnesia as well as more salt it has a stronger aperient effect and may be used more advantageously in cases of obstinate constipation and for reducing fat. In this respect it can be placed side by side with the Marienbad waters. Then, as there are no sulphates, it is not so likely to produce depression. Other salt springs which very effectively reduce fat too often cause weakness. On the other hand, the Landgrafenbrunnen is not so easy to absorb and therefore when the patient has a delicate digestion he will have to fall back upon the Elisabethenbrunnen. Here, in any case, are the analyses of these two springs made by Professor Dr. H. Fresenius who is one of the greatest authorities in Germany:—

	In 1000 parts by weight of water.	
	Landgrafenbrunnen 1904.	Elisabethenbrunnen 1901.
Sodium chloride ($NaCl$)	9·678044	7·767251
Potassium ,, (KCl)	0·368389	0·272864
Lithium ,, ($LiCl$)	0·020748	0·015136
Ammonium chloride (NH_4Cl)	0·002594	0·010848
Calcium ,, ($CaCl_2$)	1·760640	1·281842
Sodium bromide ($NaBr$)	0·004135	0·002954
Sodium iodide (NaI)	0·000018	0·000032
Barium sulphate ($BaSO_4$)	0·001557	0·001020
Strontium ,, ($SrSO_4$)	0·043435	0·018038
Bicarbonate of strontium [$SrO(CO_2)_2$]	0·004741	—
,, calcium [$CaO(CO_2)_2$]	0·974873	0·802482
,, magnesium [$MgO(CO_2)_2$]	1·108505	0·780704
,, iron [$FeO(CO_2)_2$]	0·065196	0·031527
,, manganese [$MnO(CO_2)_2$]	0·001738	0·001753
Calcium arsenate [$Ca_3(AsO_4)_2$]	0·000130	0·000199
,, phosphate [$Ca_3(PO_4)_2$]	0·000334	0·000814
Silica (SiO_2)	0·034627	0·025616
Total	14·269704	11·032674
Free carbonic acid gas (CO_2)	1·834179	2·300613
Total, including gas (CO_2)	16·103883	13·333287

The local practitioners insist that the new spring can be compared with those of Carlsbad and Marienbad. Actual experience shows that its use is to be recommended notably for excessive corpulence and that the effect is not exhausting to the circulation or to the nervous system. This is probably due to the fact that the water does not interfere to the same extent with the assimilation of the food. Dr. Baumstark of Homburg insists, for instance, that the neutral salts contained in the waters are easily absorbed—that is to say, a portion of the salts are taken up by the blood—therefore the watery evacuations do not contain food products that should be absorbed as nutriment. He argues that physiological action within the body due to the secretions of the glands, the liver, or the mucous membrane of the stomach depends to a large extent on osmosis. This is increased if the blood contains neutral salts such as those provided by the Homburg waters and Dr. Baumstark urges that this would not occur where the salts are of such a nature that they cannot so easily be absorbed.

It would be difficult to find a place where there is such a variety of waters as at Homburg. Not only is the result of taking the water free from debilitating effects for the reasons given above but perhaps also because they contain a small proportion of iron. If, however, this does not in itself suffice there are likewise two chalybeate springs.

[1] Parts I. and II. appeared in THE LANCET of August 12th (p. 484) and 26th (p. 629) 1905.

The Luisenbrunnen is a mild, easily digested iron water which contains a small quantity of sulphuretted hydrogen but no chloride of calcium. This perhaps explains the fact that it does not excite or produce headaches. Then there is the Stahlbrunnen which contains much more salt and more iron; it is a very strong tonic but does not produce constipation. Thus it is possible to stimulate and to strengthen while ridding the system of superfluous fat. Dr. Fr. Hoeber, in a small book on the waters of Homburg, says that:—

> To sum up, we have seen that saline waters are almost entirely absorbed and that they can diminish the weight of the body because the nutritious substances introduced into the human system are more quickly consumed; but we have also seen that if given in smaller doses they promote the assimilation of albuminates and thus help nutrition and facilitate the reception of nourishing food. In a word, the great advantage of the mineral springs, rich in chlorides and poor in sulphates, is that, according to the will of the physician, they may promote as well the regressive as the progressive metamorphoses of the body, and that according to their administration and the diet observed during their use they can increase or diminish the weight of the body. This is the reason why the Homburg waters have in many cases apparently quite opposite effects; this, too, is the reason why we see here, on the one hand, stout and pasty-looking men relieved from the excess of weight, leaving the place rejuvenated and with recovered elasticity, and why, on the other hand, we see tender and delicate-looking ladies of tall and thin frame returning to their homes with a healthy complexion, firmer in muscles, and increased in weight.

Dr. Hoeber also urges that delicate patients suffering from anæmia or torpidity of circulation who are advised to take the iron waters at St. Moritz or at some other high altitude should first stay, if only for a fortnight, at a bracing place which combines the invigorating effect of dry mountain air with a mild climate, so that the patient may thus prepare himself for the rough and more trying effect of the high mountain resorts. Homburg is about half-way between England and the Swiss mountain stations. Its climate is very dry because the nearest rivers, the Rhine and the Main, are too far off and the brooks in the neighbourhood are too small and shallow for the evaporation of water to produce mist or damp. Then there is very little rain and it is rapidly absorbed by the soil. The neighbouring mountains and vast forests give a low summer temperature and a stimulating atmosphere. It is an admirable half-way house between, for instance, the mild moist climates of the southern coasts of England and the high altitudes and rigorous climate of the Engadine or of Davos.

Dr. C. Weber, who is one of the leading physicians at Homburg, expressed his surprise that there were not more cases of heart disease sent to Homburg: the wells were in such a perfect condition, they were so rich in carbonic acid gas, and it had been often demonstrated that baths in such waters were very useful in diseases due to insufficiency of heart action or to increased tension of the blood (arteriosclerosis). But many patients had been kept away last year by the motor race which was held in June and because in August there were too many galeties and the cost of living in some of the hotels was too high. Yet no health resort more faithfully fulfilled its promises so far as the efficacy of its waters and baths was concerned. There has been, however, difficulties in regard to diet. Some hotel-keepers did not take an intelligent interest in the patients and did not readily provide the diet prescribed. Though this was often cheaper than the usual hotel fare an extra charge would be made. Now, however, the hotel-keepers are beginning to understand their true interests better. The 15 active practitioners of Homburg have met and after much discussion they agreed upon four dietary tables with three subsections each. These have been drawn up and printed. They are given to the patients and by the patients to the hotel-keepers, and as they are the same, though coming from different medical attendants, the respective cooks are getting familiar with them and know better what to do. The four diet tables are for gout and kindred diseases, for gastric disorders, for chronic obstruction, and for diabetes. These are matters that will be taken in hand more and more carefully by all the hotel and lodging-house keepers as they realise that on the cure of the patients depends the prosperity of Homburg. Therein lies the future of the town.

Dr. Weber also pointed out to me the newly introduced thermal-mud treatment. This is sometimes known as the fango treatment. The clay heavily charged with silicate found close to the Homburg springs is dried by exposure to the air and then ground to fine powder. To this hot mineral water is added till a sort of potters' clay is produced. It is then placed like a poultice on the affected limb. The temperature is generally from 115° to 140° F. and being a bad conductor the mud preserves the heat for a long time, so that the mud poultice can be applied for from 25 to 40 minutes. After that the patient stays 15 or 20 minutes in a mineral bath. The following analysis of the Homburg thermal mud has been made by Dr. A. Rüdiger:—

Silica (SiO_2)	37·420
Alumina (Al_2O_3)	13·776
Ferric oxide (Fe_2O_3)	3·612
Lime (CaO)	0·566
Magnesia (MgO)	0·904
Potash (K_2O)	0·526
Soda (Na_2O)	2·220
Sulphuric anhydride (SO_3)	0·230
Chlorine (Cl)	0·310
Organic and volatile substances	4·520
Water	35·276
	100·000

No demonstration has yet been given to show if any of these constituents penetrate and enter the general circulation of the patients, but researches are now being carried forward with a view of ascertaining whether the mud contains radio-active substances. In any case it gives good results in the treatment of several complaints and notably of chronic rheumatism, gouty articular deposits, and pleural and other effusions.

It is at the Kaiser Wilhelmsbad that these mud poultices are to be obtained. This is a palatial building and was constructed in 1890 (see Fig. 1). Here there are 48 separate

FIG. 1.

The Kaiser Wilhelmsbad, where the mineral water, mud, and other baths are given. The inclosure in the foreground protects and leads down to the Kaiserbrunnen spring.

rooms for the mineral baths. There are also vapour baths, electric baths, a swimming bath, and a room for massage and for gymnastics. For the mineral-water baths the Schwarz method is applied. The bath is made of metal, probably copper or brass. In this the water from the springs is admitted in its natural and cold condition. Had the water been previously heated it would have lost its carbonic acid gas. The temperature is raised at the moment the bath is going to be used by steam coils that pass underneath and outside the bath. Then there are also mud baths. These are made with peat taken from the Rhön mountains, which is torn asunder and reduced to small particles. It is then mixed with the mineral water and warmed. All this implies the use of machinery and a considerable amount of labour. The baths are luxuriously fitted up, well warmed in the colder months of the year, and an elaborate treatment may be here followed with every comfort.

Close at hand, in the identical building where the first roulette table was established, there is an institute for mechano-therapeutics. This has been established by Dr. Gustav Hamel, and he has there 35 different machines giving 60 different kinds of movement. Large windows open out on to a broad balcony or terrace with two pine trees growing through the flooring. Beyond a thick cluster of trees hides this from view. When the weather is fine carpets are laid out

here and the patients can sit in the open air. Thus as the machines expand their chests and induce deep breathing they absorb the pure out-door air loaded with the balsamic perfume of the pine trees. Dr. Hamel has come to an agreement with the medical practitioners of the town that he will not in any way compete with them. He will not practise medicine in the ordinary sense of the term but will only treat by mechano-therapeutics those patients who are sent to him by the medical practitioners of Homburg.

From all these details it will be seen that the town of Homburg is admirably equipped for the treatment of a large variety of diseases. By nature it is favoured in every way. The money and the art brought to bear by the Blanc brothers have created not only a splendid Kurhaus, with its theatre, its vast concert rooms, and reading rooms, but has surrounded it by a most beautiful park. Here the bands play, here idlers while away their time with golf or tennis, the patients sip the waters, and the more thoughtful may read in the open air in the midst of beautiful scenery (see Fig. 2). From

FIG. 2.

View from the Kurhaus terrace of the pleasure gardens and park where the mineral springs are situated.

this centre a great variety of paths and roads lead to low hills or to mountains some 3000 feet high. Patients with feeble hearts can here take graduated exercise on level ground or by climbing. Those who have a taste for natural sciences—botany, entomology, geology—can pursue their studies in the Taunus mountains. Though undoubtedly a large proportion of the people who frequent Homburg have more money than brains, still there are a few professors and men of intellect who need the waters. Perhaps it is in the provision of intellectual occupations and diversions that there is the most need for improvement and some innovations. Rambling clubs, for instance, might be established with competent scientific guides to explain something of the botany, zoology, or geology that can be gleaned in the walks and excursions which are so numerous and varied round and about Homburg.

In a word, the citizens of Homburg must strive to efface from their memories the recollection of the extravagant, reckless, ignorant, wealthy, dissipated crowds that used to fling their money away in the hotels and on the roulette tables. If some such people still come to Homburg it must be borne in mind that they come not to gamble but rather as penitents punished for over-indulgence and seeking to remedy by drinking the waters the evil wrought in the past. Such persons do not want to revert to their former extravagances and if they find themselves surrounded by temptations to this effect then they will go in preference to other health stations that have a better comprehension of their medical mission. Such, then, is the future of Homburg. It will become more and more a place where all the inhabitants will grow in the understanding that it is their duty in life to help, each in his particular line, to cure patients coming from all parts of the world. Homburg has no other claim for public patronage than that arising from the number of cures effected. In the past Homburg was a pleasure resort. In the present it suffers from the traditions then created. In the future it must efface those traditions and give itself up wholly to the noble mission of placing its great natural resources at the service of suffering humanity.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

Infants in Elementary Schools.

THE feeling against children under five years of age being allowed to attend the public elementary schools seems to be spreading. The medical officer of health of Bradford says that from three to five years is the age when children are most susceptible to measles and when it is most fatal. If they were not allowed to attend school under five years of age there would be a smaller mortality from this disease and from whooping-cough, less defective eyesight, and more room for older pupils. The medical officer of Oldham takes much the same view and also says that school life, especially among the infants, is greatly responsible for the prevalence of certain infectious diseases. The chairman of the Barrow education committee says that the exclusion of these children from school would lessen the cost of education by £2000, a sum equalling a rate of 2*d.* in the £. At a recent meeting of the Sunderland education committee it was decided by 18 against 2 not to admit children under five years of age. The chairman said that the schools ought not to be used as crèches, while another member "deplored the continual weakening of parental responsibilities" and said that it was not the ratepayers' duty to provide nurseries for infants, although infants might be in some ways far better in school than in the slums. If the mothers were free to give proper attention to the children, if they were wishful and sufficiently instructed to look after them properly, they would be the right people to have charge of their own children, but take the average of poor women in the "mean streets" and the slums and one could scarcely contend that the children would be better at home than at school, considerations of epidemic disease apart.

Railway Ambulance Work.

On August 24th, at the London-road station, Mr. E. Chapman, M.P., presented the Royds Ambulance Shield to the Newton Hyde team, the winners of the annual competition. The shield is the gift of Colonel Royds, M.P., and is competed for yearly by teams representing the various depôts on the Great Central Railway. With the shield is given a money prize of £5, the second and third teams receiving £3 and £2 from the Sir Edward Watkin Meritorious Conduct Fund. The second team this year was the Hull and the third the Barnetby (engineers' department). There are already more than 1000 servants of the company competent and ready to render first aid to the injured. The movement has grown rapidly and is still growing. Six years ago only three teams competed for the Great Central prize, while this year there were 18. This movement deserves every encouragement. It is an indication of kindliness and humane feeling on the part of the men, which the instruction converts into a practical, skilled, and disciplined agency for good, while the morally elevating effect on the men is by no means the least of the benefits that this ambulance work brings in its train.

The Grocer's Mistake.

One of those unfortunate little mistakes which cause death was inquired into by the Manchester county coroner on August 23rd. A woman in Gorton went to a grocer's shop for some castor oil. By mistake she was served with camphorated oil instead, and after drinking it was taken ill and died. When the grocer found out his mistake he ran to her house and said he had given her the wrong oil, but when told she had taken it he added that it would do her no harm. She died shortly afterwards. Mr. G. A. Wolfendale, who made a post-mortem examination, said there were traces of the oil in the stomach. His opinion was that death was due to cardiac syncope, accelerated by irritation of the stomach, due to the presence of camphor. Mr. W. B. Rigby agreed in the main with Mr. Wolfendale's evidence, but thought the fatty condition of the heart was sufficient to cause death. He said there seemed to be none of the symptoms of camphor poisoning. "There would be an intense burning of the throat," he pointed out, but the deceased did not complain of such pain. He rather thought, however, that death had been accelerated by the camphor. The camphorated oil would probably cause much less burning in the throat than camphor dissolved in spirit. The verdict was death by misadventure, and the coroner advised the grocer to be more careful in future. No doubt he will be,

but such accidents are too frequent and show that the sale of poisons is often left in unsafe hands.

Hospital Sunday and Saturday Fund.

The amount collected for the Hospital Sunday and Saturday Fund in Manchester and Salford allows this year for the distribution of £7500 among the various medical charities. The apportionment is as follows:—

	£	s.	d.
Children's Hospital ...	1240	3	2
Royal Infirmary	1215	18	9
Sick Poor and Private Nursing Institution	757	2	2
Hospital for Incurables	591	15	11
Salford Royal Hospital	538	8	9
Ancoats Hospital	499	12	2
Southern and Maternity Hospital	468	19	6
Royal Eye Hospital ...	467	2	3
Northern (late Clinical) Hospital	431	15	11
St. Mary's Hospital ...	414	15	4
Hospital for Consumption	359	13	9
Hospital for Skin Diseases	145	17	2
Ear Hospital	94	15	4
Christie's Hospital (Cancer Pavilion) ...	81	1	10
Victoria Dental Hospital	61	11	3
Hulme Dispensary ...	52	6	11
Lock Hospital	43	10	4
Chorlton-on-Medlock Dispensary	26	17	6
Homœopathic Institution	8	11	10
	£7500	0	0

Pure Milk for Leeds.

An experiment is to be tried at Leeds which will be watched with interest. An establishment for the supply of pure milk, run at a loss, is to be opened. It is in the heart of Leeds, surrounded by the poor, is the property of the corporation, but the expenses of the scheme are being borne by a voluntary fund to which the Lord Mayor has contributed. The provision of pure milk direct from the farm, if carried out successfully, will be a priceless boon, but it would be unfortunate if what looks like the element of charity in the scheme should do anything to sap the sense of responsibility and the self-respect of the parents.

Suicide Epidemic.

Manchester and the district around have had to chronicle an unusual number of suicides lately. A Salford publican, 29 years of age, who was slightly in debt, from which he could easily have been extricated, was found with his throat cut and "on a barrel was found a bottle and a tumbler containing ammonia." In the same district a commercial traveller shot himself because an appointment which he expected had been deferred, while he had, it seems, some hallucinations or fancies about his health. The verdict was, of course, "temporary insanity," but the unfortunate man had arranged his affairs in a letter to the coroner and expressed a wish to be cremated. Another case was that of a man, aged 71 years, who had been in an asylum and whose relatives had been cautioned as to his being suicidal. He was found in a claypit. The jury added a rider to the verdict to the effect that he ought to have been more closely attended, but medical men with experience in the care of suicidal patients know that no amount of attention will ever avert such catastrophes. These cases were the tragedies of one week-end.

Sept. 4th.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

Hospital News.

BY the will of Mrs. John Poncia of Erdington several charitable institutions benefit. I understand that the Birmingham General Hospital and the Queen's Hospital will each receive £10,000.—Arrangements are being made for the opening in connexion with the Guest Hospital and Dudley Dispensary of a branch for the treatment of diseases of the eye. The branch will be maintained by a special fund and the in-patients will be treated at the Guest Hospital while the out-patients will go to the dispensary. The patients will be under the care of Mr. B. H. St. Clair Roberts.—At the last meeting of the Hanley, Stoke, Fenton, and Longton joint hospital board a letter was read from the Local Government Board sanctioning the borrowing of £1334 for the provision of a new mortuary and water-storage tank at the hospital. The letter proceeded to state that the Board regretted the decision of the joint board not to provide accommodation for enteric fever. It pointed out that enteric fever was in the majority of cases a far more formidable disease than scarlet fever; that the mortality caused by it was greatest among persons in the prime of life; that the chances of recovery of the patient depend largely upon his receiving proper nursing and diet; and that infection frequently spread from one member of a family to another under the conditions of accommodation and nursing which were met with in households of the poorer classes. The Board found from the reports of the Registrar-General that in the Stoke registration district, which corresponded with the area of the joint hospital district, in the five years ending 1904, 174 deaths from enteric fever were registered against 149 from scarlet fever. It appeared to the Board, therefore, that in reserving its hospital for scarlet fever and diphtheria, to the exclusion of enteric fever, the joint hospital board was not making the best use of the accommodation which it possessed in the health interests of the district. Replying to a question, Dr. C. H. Phillips said that the number of patients in the hospital had never exceeded 120, whereas the accommodation was about 160 beds. He suggested that they should use one 24-bed pavilion for cases of enteric fever and he thought that they would have sufficient accommodation for other cases. It was decided to refer the matter to the chairman's consulting committee for further consideration. During the quarter 108 patients had been admitted into the hospital—viz., 46 suffering from scarlet fever, 56 from diphtheria, and six from combined diseases. Nine deaths had occurred from diphtheria and two from combined diseases.—The annual meeting of the supporters of the Corbett Hospital, Stourbridge, has recently been held. During the year 604 cases had been examined and 355 patients had been admitted to the hospital. The hospital premises have been enlarged by the addition of a sterilising chamber. The medical officers in their report state that the demands on the resources of the hospital have so increased that they regret their inability to cope with them. They wish to see not merely increased accommodation for patients but the establishment of a convalescent home in the country to which patients could be sent from the hospital. The financial report shows that while the income is practically unchanged there had been last year £350 less expenditure.

The Small-pox Epidemic at Nuneaton.

Another outbreak of small-pox has occurred at Nuneaton, the second this year and the third within 18 months. The outbreak is traced by the medical officer of health to a schoolboy, but where the lad contracted the disease he has been unable to find out. The number of cases notified up to the present is 40 and of these only three were vaccinated. The outbreak has been almost entirely confined to children, only three adults having been affected. No less than 19 cases were attributable to the schoolboy who seems to have initiated the epidemic. All possible precautions are being taken by the medical authorities to limit the spread of the infection. A house-to-house visitation is being energetically made throughout the affected area by a county council health visitor and a school attendance officer. The vaccination officer acting under instructions of the board of guardians is also visiting each house and vaccinating the inmates. The workhouse is closed except to urgent cases and inmates' leave of absence is suspended. No visiting is allowed at the General Hospital and the public open-air bath has been closed. The sanitary committee of the district council has decided to remove the sand from a pit in the Nuneaton recreation ground where many of the children down with small-pox had been in the habit of playing. Unfortunately difficulties have been put in the way of the medical authorities by parents not merely neglecting to notify cases but wilfully suppressing all information about them. Cases have been brought to their notice by anonymous communications and their work, in consequence of the great difficulty they have experienced in unearthing cases, has literally occupied them night and day. Police proceedings have been taken in several instances and fines summarily inflicted. Luckily the epidemic is a mild one, only two cases, so far, being of the confluent variety.

Birmingham and Day Nurseries.

Now that the local educational authorities have discretionary power to refuse the admission of children under five years of age to their schools, attention is being directed to the question of crèches or day nurseries for such children. Many of the schools in Birmingham have been specially adapted for the reception of small children and it is probable that for some time at least children under five and over three years of age will not be excluded. There are already two crèches in Birmingham, the result of philanthropic effort, and although small,

being only able to accommodate an insignificant proportion of the infant population in the immediate district in which they are situated, they have done, and are still accomplishing, a valuable work. The advantages offered are readily sought and evidence is not wanting to show that there would be a real demand for such provision if made in the most congested and poorest quarters of the city where oftener than elsewhere women are the bread-winners. The subject was referred to by the medical officer of health in a special report last year, but without his making any recommendation. It has also been brought before the health committee, but no action has as yet been taken. In view of the infantile mortality and the decreasing birth-rate many in Birmingham think that some such provision should be made, but the general feeling is that it should emanate from a private rather than a public source. The question may, in the near future, reach a more acute stage in Coventry than in Birmingham, for the Coventry city council has confirmed the recommendation of the sanitary committee that the education committee, in view of the extensive prevalence of infectious disease in infants' schools during the last few years and on the grounds of the general health of children, should be urged to do its utmost to discourage the attendance of children under the age of five years at its schools.

The Royal Commission on the Care and Control of the Feeble-minded.

At the last meeting of the Stoke-on-Trent board of guardians a letter was received from the Local Government Board stating that the Royal Commission on the Care and Control of the Feeble-minded had appointed two medical men to make an inquiry respecting the number of the mentally defective in the union of Stoke and in several unions of Somersetshire. Dr. W. A. Potts of Birmingham will make the inquiry in the Stoke-on-Trent union. The inmates of the Poor-law institutions, workhouses, infirmaries, casual wards, and schools will be examined with a view of noting and classifying the mentally defective therein. Inquiries will also be made from medical officers and relieving officers as to the same classes comprised among those receiving out-relief.

The Health of Worcester.

The medical officer of health of Worcester in his report upon the second quarter of the year records that the birth-rate of 24·22 per 1000 of the population was 3·3 per 1000 below the average rate of the ten preceding second quarters, while the death-rate of 13·85 was 4·21 per 1000 less than the average of the ten preceding quarters. The deaths of infants under one year numbered 51, which had only been once exceeded during the ten preceding second quarters and was ten in excess of the average number. The infantile death-rate per 1000 births was 4·5 above the average.

Sept. 5th.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

Report of the Medical Officer of Health for the Year 1904: Health of Liverpool.

THE area of the city comprises 14,909 acres, or a little more than 23 square miles, with an estimated population of 723,430. The birth-rate continues high—namely, 33·5 per 1000 of the population. A diagram in the report shows how the birth-rate of Liverpool has exceeded that of England and Wales during the last 40 years. The death-rate of the city for the year was 21·9 per 1000 of the population, being 2·1 per 1000 higher than that of the preceding year. The increase in the death-rate was entirely owing to the increase in deaths of infants and children below five years of age, the deaths at other age-periods having been below the average. The year 1904 was characterised by an excessive mortality from infantile diarrhœa during the months of July, August, and September, the temperature being very high in July and the rainfall lower than the average during that and the preceding month. The deaths of over 1500 infants during July, August, and September were registered as being due to choleraic diarrhœa and allied causes. Great attention has been given to the milk depôts. The members of the medical staff of the Children's Infirmary and other medical men of the city have made use of the depôts as a means of lessening sickness amongst infants requiring their attention. The more dangerous forms of zymotic disease have shown a decrease. Representatives of the health committee were invited by the London County Council to attend a conference upon the subject of the spread of small-pox by vagrants and the preventive or remedial measures to be adopted. Alderman Roberts and the medical officer of health (Dr. E. W. Hope) attended the conference on behalf of the committee on Nov. 10th, 1904. The conference, which was somewhat prolonged, resulted in resolutions being passed as to the detention, cleansing, and vaccination of tramps. Ultimately these matters were referred to a subcommittee, upon which Alderman Roberts was selected to represent the city of Liverpool. Typhus fever has continued to appear from time to time, although to a relatively trifling extent as compared with its prevalence in former years. With regard to tuberculosis some interesting tables will be found in the report illustrating the remarkable decline in pulmonary tuberculosis owing to the sanitary measures adopted during the last 20 years. The voluntary notification of pulmonary tuberculosis by the medical attendant originated in 1901 has been persevered with and the help of the sanitary authority has thus been available in those forms of the disease in which it can be of use. Instructions for the guidance of tuberculous persons are issued through proper channels. Owing to the prevalence of infectious sickness of various kinds amongst the pupils it was found necessary from time to time during the year to close a considerable number of schools. The greatest sufferers were those attending the infants' schools and the babies' classes. It is not in the interests of health for very young children to be sent to school. On the contrary, there is every reason to believe that injury results from the proceeding. A large number of schools were examined under the terms of the resolution of the education committee, which occupied a considerable amount of the time of the staff. Reference is also made to the working of the Midwives Act. The health committee approved of an application being made to Parliament for additional powers in regard to certain important sanitary measures, notably to facilitate dealing with nuisances and conditions injurious to health arising from noises made by animals in confinement; to prevent the continued occupation of cellar dwellings; for checking the spread of ringworm and for the sanitation of hairdressing saloons; for dealing more effectively with stables; for the better lighting, ventilation, and cleanliness of restaurants and places where food is prepared for consumption; for improved sanitary conveniences in lock-up shops; and for checking nuisance arising from smoke from steamers on the river, hitherto not under control. From time to time considerable anxiety was occasioned by the difficulties in the way of dealing adequately in the interests of the public health with certain parts of the area of the Rivington watershed. The section of the watershed known as the Lever Park threatens to be a source of danger to the community of Liverpool and will require careful consideration to insure the protection of the community from conditions which in almost innumerable instances have been proved to be the source of dangerous outbreaks of typhoid fever. The President of the Local Government Board received a deputation on May 13th, 1904, on the subject of a quinquennial census. Dr. R. Caton and Dr. Hope represented the health committee of Liverpool upon the deputation. The deputation, which was a very large one, represented generally the sanitary interests of the country and was unanimous in urging upon the President the necessity for a quinquennial census. From the report of the medical officer of health for the week ending August 26th, 1905, it is gratifying to know that Liverpool is steadily improving in its health conditions. During the week only 280 deaths were registered, showing a decrease of 130 on the corresponding week of last year, and representing a death-rate of 19·9 per 1000 of the population. The number of births during the same period was 497, being equivalent to a rate of 35·3 per 1000. Only 233 cases of zymotic disease were reported and the deaths therefrom numbered 97, as compared with 209 from the same cause last year.

A New Department at the David Lewis Northern Hospital.

A new department for "orthopædic gymnastics and massage" has been created at the David Lewis Northern Hospital, to which Dr. W. H. Broad (who is devoting himself specially to the practice of massage after a course of instruction in Sweden) has been appointed surgeon in charge. Through the generosity of Mr. Levy, one of the David Lewis

trustees, a room has been fitted up at the hospital containing several "exercise machines."

Conference of Lancashire and other Unions.

A conference of representatives of Lancashire, Westmorland, Cumberland, and Cheshire Poor-law unions was held on Sept. 1st in the town hall, Lancaster, under the presidency of Sir John T. Hibbert who quoted statistics showing the increase of vagrancy in the North-western Poor-law district. The meeting favoured the establishment of farm and labour colonies for the accommodation of tramps and a committee to be appointed from the different boards of guardians to further such a scheme was approved of.

The Spread of Asiatic Cholera.

The customary strict precautions taken by the port sanitary authorities of Liverpool are never relaxed and are efficient for dealing with any situation which might arise. The flow of cases of cholera is from east to west and in the opinion of Dr. Hope, the medical officer of health, the first point of difficulty in England will be Hull.

Beri-beri in Liverpool.

The German steamer *Forsteck*, which arrived in the Mersey on Sept. 2nd, had on board five Chinese sailors who were said to be suffering from beri-beri. All were removed to the tropical diseases ward of the Royal Southern Hospital.

Sept. 5th.

NORTHERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENT.)

Newcastle-upon-Tyne: Opening of New Nurses' Home.

THE first stage in the opening of the new infirmary at Newcastle took place when the new nurses' home was recently started. It is now many years since the old infirmary ceased to be able to house its nurses and the majority of them have been sleeping out in the old nursing home, but even this accommodation was insufficient and some had to be lodged in the hostel of the Young Women's Christian Association. The new home has accommodation for 104 nurses, but at present it is only partially occupied, the sisters still retaining their rooms in the old building. In the new home each nurse has a bedroom to herself and these are very tastefully and substantially equipped. The sitting and dining rooms are on the ground floor; they are large, light, airy, and properly furnished. The new infirmary is connected to the home by a covered way, the entrance to the latter being through a large conservatory which will form a very useful addition to the recreation room. Throughout the building the electric light is fitted and a lift connects the various floors in addition to the staircases. Already the place has lost its dreary aspect, for apart from its being inhabited the shrubs and planted borders round about are looking quite smart. The nurses themselves are thoroughly satisfied with their new quarters though at present it means that they have a walk of about 20 minutes night and morning through a not very salubrious part of the town, for the home is about three-quarters of a mile from the old infirmary. They have to make an early start, as breakfast is ready at 6.15 A.M. and they must be on duty by 7. In the evening they reach the home about 9.30 and the lights have to be out by 10.30. Sir Riley Lord, the chairman of the building committee, presided at the opening and was supported, among others, by the Mayor of Newcastle (Alderman J. Baxter Ellis), the Sheriff of Newcastle, Lord Armstrong, Sir George Hare Philipson, Dr. D. Drummond, and Dr. G. H. Hume. The chairman, on behalf of the building committee, officially handed over the home to Lord Armstrong who, as chairman of the management committee, represented that body. At the close of the proceedings the Mayor gave a donation of £5 towards furnishing the nurses' library.

Sunderland Infirmary: Appointment of Honorary Physician; Annual Report.

By the death of Dr. James Murphy two vacancies were virtually caused in the staff of the infirmary, for Dr. William Robinson, who was appointed to the vacancy in the surgical side, was himself one of the honorary physicians. There were four candidates for the vacancy on the medical side—Dr. G. B. Morgan, jun., Mr. A. Ayre Smith, Dr. H. K. Wallace, and Dr. J. Chalmers. The first vote was as follows: Dr. Morgan, 17; Dr. Chalmers, 12; Dr. Wallace, 3; and Mr. Smith, 2. Another vote resulted as follows: Dr. Morgan, 18; and Dr. Chalmers, 16. Dr. Morgan was therefore elected. The 111th report of the Sunderland Infirmary shows that a total number of 11,333 patients were treated at the hospital during 1904, an increase of 606 over those treated in 1903. Of this number 3172 were in-patients and 8161 out-patients. The average stay in hospital was 21 days and the cost per head was £2 18*s.*, while the cost per bed occupied works out at £49 14*s.* 11*d.* The ordinary income, though increased to £10,623, as compared with £10,279 for the previous year, does not quite reach the total expenditure. Funds are not yet forthcoming for the provision of a children's hospital in connexion with the infirmary, though several substantial donations have been received. It seems a great pity that a hospital in which so much work is done does not give more details of its labours, for there is not one word in the report as to the nature of the medical work done nor is there any information that would be interesting to the student of vital statistics.

Central Midwives Board: Newcastle Centre.

At the recent examination held in the Lying-in Hospital at Newcastle-upon-Tyne there were nine candidates of whom two were unsuccessful. The training of the candidates is carried on at the Lying-in Hospital where the nurses attend personally 20 cases, mostly, of course, in the extern charity. Last year there were 800 cases attended and this number is yearly increasing, for there is no other similar charity in the neighbourhood.

Sept. 5th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Infants' Milk Depôt in Glasgow.

A DEPÔT for the preparation of milk suitable for infants was opened in Glasgow in June, 1904. It has been in operation for a year and a report on the work done during the first six months is now published. The milk is getting into the hands of that section of the people whom it is desired to reach and now the dairymen in various localities in consequence of the demand are applying for the specially prepared milk in greater measure than the institution is able to supply it. These dairymen are all anxious to become distributors. The charges for a supply of this milk are payable in advance and the terms are for infants under three months 2*d.* per day, under six months 2½*d.* per day (six-ounce bottles), and over six months 3*d.* per day (seven-ounce bottles). The central depôt is open from 11 A.M. to 6 P.M. on week days and a two days' supply of milk is given out on Saturdays. The milk is supplied in bottles in a basket, each bottle containing sufficient milk for one meal, the amount varying with the age of the child. Infants under two months of age receive nine bottles per day, while older children receive fewer bottles as they are fed less frequently. Breakages are charged at the rate of 1*d.* per bottle and damages to the baskets must be made good. Every person using the milk is supplied with a teat and mothers are warned that on no account must a bottle be opened until the infant is ready to be fed. It is impressed upon the parents that the milk must never be used in preference to that of a healthy mother, which is the best of all foods for young infants. A leaflet is also issued to the purchasers bearing instructions as to the hours of feeding, the heating of the milk, and the cleansing of the bottles after use. During the first six months 314 cases were entered at the depôt, and of these at the end of that period 176 remained on the register. Of those who did not continue taking the milk 44 children left within a week's time, 11 within two weeks, 14 within four weeks, 18 continued till the third month, 11 to the fourth month, and five over four months. It is satisfactory to note that a large majority of the children are in the early months, 84 of the total being under a month at entry, and 54 being under two months. As was to be expected, the largest proportion of the children is drawn from the districts in the immediate neighbourhood of the depôt, but with the increase in number of the distributing dairies those living at a greater distance should have no difficulty in obtaining a

regular supply of the milk. Up to the end of December, 1904, only two distributing dairies in addition to the depôt were in operation, but at the date of writing there are nine such distributing centres. At the depôt a register is kept containing a carefully prepared record of the essential facts appertaining to each child. Some difficulty has been found in obtaining information regarding those who are supplied through the distributing dairies but in this respect much valuable assistance has been given by the Charity Organisation Society in the visitation of households to which milk is being sent. This is regarded as a most essential part of the work if it is to have any educational value. As the value of this institution becomes more recognised by that section of the people for whom it is intended it is to be expected that a change for the better will take place in the infantile mortality in the city.

The Dangers of Shellfish.

In the early part of the summer the medical officer of health of Glasgow issued a report dealing with the dangers of eating shellfish gathered from infected areas of the shore and especially warning trippers who, from ignorance, were likely to be the worst sinners. Such a warning was not given needlessly, as is evident from the fact that during the last fortnight in Glasgow six cases of enteric fever, due to the eating of raw mussels, have been reported. In four of the cases the shellfish were gathered at an east coast town and in the other two at a Clyde watering-place.

Dunoon Cottage Hospital.

This hospital has been in existence for 20 years and in that time it has done excellent work. Owing to the increase of population in the district it was found that the hospital could not meet all the demands made on it. A bazaar has been held to raise funds for the hospital and the directors were fortunate in getting Princess Louise to open it. The sum aimed at was £4000. The amount realised by the bazaar was £2909 12*s*. 4*d*. and this with a donation of £1000 from Mr. Younger of Benmore and £500 from Mr. Coats of Paisley makes a total of £4409 12*s*. 4*d*. The directors have not decided whether they will extend the present hospital or rebuild on another site.

Sept. 5th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Salaries of Dispensary Medical Officers.

THE inquiry recently conducted by Sir Acheson MacCullagh, Local Government Board inspector, into the salaries of the medical officers of the Tullamore union was one of more than usual interest. A consensus of opinion was expressed by the guardians that the present salaries were inadequate and that a suitable increase in them was debarred by Clause 6 of the Amending Act to the Local Government Board Act. That clause provides that any increase given to the medical men over the salaries they receive in what is known as the standard year should be borne altogether by the local ratepayers. It was said that this clause was rushed through Parliament and Mr. J. S. McArdle of Dublin, who attended the general meeting of the Irish Medical Association at Killarney, said that it was the chief obstacle in the settlement of suitable salaries for the dispensary medical officers. In the ordinary course the Treasury would defray half the amount of any increase and if this was done the Poor-law guardians would pay the remaining half. Now they cannot afford to do so. Mr. G. A. Moorhead, who has practised in that district for many years, deposed on oath that £100 per year went in connexion with his official duties, leaving him £50 and the emoluments of his practice to live upon. The other medical officers of the union gave similar testimony and at the conclusion of the meeting a resolution was passed that under the existing conditions—inadequate salary, absence of promotion, and uncertainty of pensions—it was impossible to attract the best men to the Irish Poor-law medical service.

Belfast District Lunatic Asylum.

Dr. W. Graham has just published, as resident medical superintendent, the seventy-fifth annual report of the Belfast District Asylum for the year ending Dec. 31st, 1904. The total number of patients under treatment was for the 12 months 1325—that is 633 males and 692 females. There were 100 deaths and 154 discharges and the admissions showed an increase of 12 as compared with the previous year. 79 patients were during the year transferred from the Belfast workhouse, making a total of 673 received from that institution during the past seven years. Dr. Graham says:—

It is interesting to note—as illustrating the mental and physical characteristics during the past seven years of these workhouse cases—that, apart from the low recovery-rate and high death-rate, there is actually an average of 53 per cent. yet remaining of those admitted, while in the year 1900, when the total admissions from the entire district were 379—one-half of which (188) were received from the workhouse—the number of workhouse cases yet remaining is 107, as compared with 32 received direct from the patients' own homes. In other words, of the 139 patients remaining from the 379 admitted 107 are transfers from the workhouse and 32 are direct admissions. The influence of these transferred cases in reducing the recovery rate of the asylum is thus clearly evident.

Dr. Graham points out that an asylum is not the proper place for the education and training of idiots and imbeciles, and although the attention of the Government has been drawn to the necessity of a better provision for such cases so far no relief has been obtained. The percentage of recoveries during the year, calculated on the admissions, is 41·0, as compared with 33·5 for the preceding year. The death-rate was 9·5 per cent., calculated on the total number under treatment, the principal feature in the mortality being again the large and increasing number of deaths—23—due to general paralysis of the insane. Nine deaths were due to phthisis and four to tuberculosis. There were no deaths from accident or suicide. The most important event of the year was the purchase in August of two farms adjoining the asylum and consisting of about 54 acres, by the acquisition of which the county road becomes the natural boundary of the asylum estate. As a result the villa colony runs no risk of encroachment from other buildings. The gross expenditure for the financial year ended March 31st, 1905, amounted to £23,958 7*s*. 8*d*., being a net capitation cost of £21 4*s*., or £1702 13*s*. 2*d*. less than the preceding year. Of the entire expenditure £10,489 0*s*. [illegible] have been defrayed by the Government contribution [illegible] per week per head and £1610 2*s*. 7*d*. have been rece[illegible] farm produce, paying patients, and miscellaneo[illegible] leaving £11,859 4*s*. 4*d*. to be paid by the c[illegible] £11 4*s*. 7*d*. as the average annual expense of [illegible] chargeable to the city. The "memorandum [illegible] (made by Sir G. P. O'Farrell, inspector o[illegible] a series of 30 tables are appended, all [illegible] interesting particulars (medical and otherw[illegible] the asylum and its inmates. Special mentio[illegible] original work done in the pathological la[illegible] asylum by Dr. R. A. L. Graham.

The Rainfall in August.

The August of 1905 will long be remembere[illegible] owing to the extraordinary deluge of rain which o[illegible] Friday and Saturday, 25th and 26th of that month. [illegible] hours ending at nine o'clock in the morning on August 26[illegible] rainfall gauges at Trinity College, Dublin, showed that 3·[illegible] inches of rain had fallen, while at Greystones, co. Wicklow, the record was 3·4 inches. On no previous occasion within the last 40 years have three inches of rain fallen within 24 hours in Dublin. As a result, Little Bray (through which the river Dargle, a mountain stream, flows) was flooded out and an immense amount of damage was done, the people being obliged to fly from their houses in the village. A relief fund has been started for them. In the north of Ireland it rained continuously for 39 hours, the record being 2·95 inches. The total rainfall in Ulster for August, 1905, was 7·82 inches, which fell on 21 days, the corresponding amount in 1904 being 4·73 inches. As a result of the great spate considerable damage was done in the districts flooded by the river Bann and the river Lagan, but, on the other hand, it proved of much value to the places where water was becoming short in amount. For example, the quantity of water now in store in the Belfast reservoirs is slightly in excess of 1904, while previously to August 25th it was much lower.

Sept. 5th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Accidents to Workmen in Tongking.

A COMMISSION has recently been appointed at Hanoi to hold an inquiry and to initiate legislation on the subject of accidents in connexion with their employment happening to

wage-earning Europeans and natives. The president of this commission is a magistrate of high rank and the members include delegates of various local undertakings, tradesmen nominated by the chambers of commerce, an agriculturist nominated by the chamber of agriculture, and M. Leroy des Barres, a professor in the school of medicine at Hanoi. Administrative officials and a high mandarin will also take part in the proceedings.

Hydrophobia communicated by Licking with the Tongue of a Rabid Dog.

At a recent meeting of the Société Médicale des Hôpitaux de Lyon M. Paviot and M. Nicolas described a case showing the danger of being licked by a rabid animal. The holder of a small farm, a man 36 years of age, had a bitch which was bitten on July 3rd, 1904, and died from hydrophobia on a date which the patient estimated as being between July 14th and 17th. This bitch was suckling a puppy, which was at that time three weeks old, and about a month afterwards it presented the same symptoms as its mother—namely, aversion to water, laryngeal spasm which prevented deglutition, convulsions, and finally paralysis; the animal did not drink and had no propensity to bite; it was killed by the patient about August 15th. The patient was perfectly certain that he had never been bitten by any of his dogs but he had several times been licked by them on his hands, the skin of which was quite sound according to his statements; he might not, however, have remembered all the circumstances and it was probable that the skin might have been cracked. The patient having no suspicion of danger did not speak of the matter and was not treated by Pasteur's method. His health remained excellent until on Sept. 22nd, exactly five weeks after the death of the dog, he had a restless night and suffered from vomiting, diarrhœa, distaste for food, and epigastric pain. At the same time he had symptoms [illegible]vous irritability, anxiety, and distress. A medical [illegible] was sent for thought at first that the case [illegible]gastric origin, but on the second and third days [illegible]included terror at the sight of liquids and [illegible]eristic of the disease. On further inquiry [illegible] was told about the dogs and the patient [illegible] antirabic institute at Lyons, where he died [illegible] convulsive attacks of extreme violence. [illegible]re inoculated with his cerebro-spinal fluid [illegible]of his central nervous system (cerebrum, [illegible]bulb) all showed characteristic symptoms [illegible]hydrophobia after an interval varying from [illegible] The inference was that a person who has [illegible]a dog which was either rabid or suspected of [illegible]o consider himself in danger if the animal's [illegible]ne in contact with fissures in the skin or even [illegible] shaven surfaces.

Hygroscopic Substances as Dust Preventers.

[illegible]. Philibert Delair has recently suggested a new method by which the dust that settles on floors may be prevented from rising. He recommends that floors should be wetted with a solution of chloride of magnesium, a very hygroscopic salt which will cause the floor to remain damp for some time; the dust is thereby moistened and can be swept up without rising in the air as usual. Two applications of a solution of chloride of magnesium at an interval of some days will render a floor capable of fixing the dust for six months. Floors treated in this way preserve for a long time a remarkably clean appearance as if they had been newly washed.

The Workmen's Compensation Act.

A section of the Workmen's Compensation Act (*loi sur les accidents du travail*) states that whenever an examination by a medical expert is ordered to be made, whether by a magistrate or by the courts, the expert shall not be a medical man who has either attended the patient or is in the service of the employer or is connected with the assurance company to which the employer belongs. The appeal court at Besançon has recently enforced this enactment and has ordered a fresh examination by an expert.

Baths and Hydrotherapy in the Treatment of Mental Disease.

At the congress of alienists and neurologists held from August 1st to 7th M. Pailhas reviewed the historical aspect of the subject at considerable length and then made some practical recommendations. For the stage of excitement he advised lukewarm or hot applications, including long-continued baths at a temperature from 22° to 34° C. (rom 82° to 93° F.). The systematic use of permanent baths must be exceptional. In mania with violence and acute delirium the stimulating action of cool or cold baths of short duration and cold wet packs, either plain or with mustard, gave better results than lukewarm or hot baths, which were depressing. Wet packing had the advantage that the patient remained in bed. In hyperpyrexia and in acute alcoholic delirium M. Pailhas recommended baths, either cool or cold, and wet packing under careful medical supervision. In insane patients with a tendency to rheumatism, gout, or plethora, the hydrotherapeutic methods should be such as to promote perspiration. In general paralysis and the mental troubles associated with cardiac or pulmonary disease hydrotherapy was contra-indicated if it was likely to cause congestion of the affected organs or to interfere with their functions. In prolonged subacute conditions some stimulating cold or cool applications (douche baths, hip baths, and affusion) were sometimes found to be better than sedative lukewarm or hot applications. For chronic conditions ordinary baths and cleansing baths with soap formed the best treatment. For the prevention of insomnia warm baths and wet packing were advisable. Local applications, such as wet packing, foot-baths, and sitz baths, were beneficial in the treatment of nervous and mental irritability.

The Repair of Wounds in Cartilage.

At a recent meeting of the Academy of Sciences M. Cornil and M. Coudray described phenomena which they had observed in the repair of wounds in cartilage. In their first series of experiments they made narrow incisions with a bistoury in the depth of the *poulie fémorale* of dogs aged from 15 to 18 months, aseptic precautions being used. No repair took place even after the lapse of a month. The same experiments were then repeated on much younger dogs—namely, from seven weeks to three months old, and the results were now very different, for cicatrisation took place in the same manner as it does in the costal cartilages. The cicatrisation, which was at first fibrinous, afterwards becoming cellular and finally cartilaginous, seemed to be due to the fact that during the period from birth to the age of at least three and a half months the superficial layer of the cartilages was provided with blood vessels and behaved as a vascular tissue. Incision of a cartilage necessarily opened these vessels and it was they which supplied the reparative elements.

Sept. 4th.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Surgery in the Russo Japanese War.

UNDER the heading of "Surgical Experiences in the Russo-Japanese War" the *Deutsche Medicinische Wochenschrift* in a recent issue publishes an article by Staff-Surgeon Dr. Schäfer who accompanied the Russian forces. He begins with the interesting statement that the majority of the wounded on the Russian side seemed at first sight to be mild cases and the surgeons were surprised to find that bullets might enter vital organs without causing any more injury than if the tissue were perforated by a small needle. This first impression was, however, not justified by the results, for complications, such as empyema, peritonitis, &c., made their appearance in the course of a few days. The opinions held by individual surgeons with respect to the prognosis of wounds differed very much, for those who were at work on the battlefield were inclined to regard the Japanese rifle as a comparatively merciful weapon, whilst those who were engaged in the base hospitals and who examined the wounded a few days later when the above complications had developed came to quite a different conclusion. Statistical tables show that the number of men killed at once compared with the number of wounded was relatively smaller than in the South African war. The penetrating power of the modern rifle bullet is so enormous that the human body only offers a very small resistance and the track of a bullet may therefore be of great length. A single bullet may traverse the left shoulder, the chest, and the right arm, so that the act of respiration causes air to pass into, and out of, a wound involving the head of the humerus. Similarly, fæces and synovial fluid have issued from a wound in the thigh. The new pattern of Japanese rifle (1897, Arusaka) has a bore of 6·5 millimetres. As the Japanese bullets have a high velocity and are cased with a

regular supply of the milk. Up to the end of December, 1904, only two distributing dairies in addition to the depôt were in operation, but at the date of writing there are nine such distributing centres. At the depôt a register is kept containing a carefully prepared record of the essential facts appertaining to each child. Some difficulty has been found in obtaining information regarding those who are supplied through the distributing dairies but in this respect much valuable assistance has been given by the Charity Organisation Society in the visitation of households to which milk is being sent. This is regarded as a most essential part of the work if it is to have any educational value. As the value of this institution becomes more recognised by that section of the people for whom it is intended it is to be expected that a change for the better will take place in the infantile mortality in the city.

The Dangers of Shellfish.

In the early part of the summer the medical officer of health of Glasgow issued a report dealing with the dangers of eating shellfish gathered from infected areas of the shore and especially warning trippers who, from ignorance, were likely to be the worst sinners. Such a warning was not given needlessly, as is evident from the fact that during the last fortnight in Glasgow six cases of enteric fever, due to the eating of raw mussels, have been reported. In four of the cases the shellfish were gathered at an east coast town and in the other two at a Clyde watering-place.

Dunoon Cottage Hospital.

This hospital has been in existence for 20 years and in that time it has done excellent work. Owing to the increase of population in the district it was found that the hospital could not meet all the demands made on it. A bazaar has been held to raise funds for the hospital and the directors were fortunate in getting Princess Louise to open it. The sum aimed at was £4000. The amount realised by the bazaar was £2909 12*s.* 4*d.* and this with a donation of £1000 from Mr. Younger of Benmore and £500 from Mr. Coats of Paisley makes a total of £4409 12*s.* 4*d.* The directors have not decided whether they will extend the present hospital or rebuild on another site.

Sept. 5th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Salaries of Dispensary Medical Officers.

THE inquiry recently conducted by Sir Acheson MacCullagh, Local Government Board inspector, into the salaries of the medical officers of the Tullamore union was one of more than usual interest. A consensus of opinion was expressed by the guardians that the present salaries were inadequate and that a suitable increase in them was debarred by Clause 6 of the Amending Act to the Local Government Board Act. That clause provides that any increase given to the medical men over the salaries they receive in what is known as the standard year should be borne altogether by the local ratepayers. It was said that this clause was rushed through Parliament and Mr. J. S. McArdle of Dublin, who attended the general meeting of the Irish Medical Association at Killarney, said that it was the chief obstacle in the settlement of suitable salaries for the dispensary medical officers. In the ordinary course the Treasury would defray half the amount of any increase and if this was done the Poor-law guardians would pay the remaining half. Now they cannot afford to do so. Mr. G. A. Moorhead, who has practised in that district for many years, deposed on oath that £100 per year went in connexion with his official duties, leaving him £50 and the emoluments of his practice to live upon. The other medical officers of the union gave similar testimony and at the conclusion of the meeting a resolution was passed that under the existing conditions—inadequate salary, absence of promotion, and uncertainty of pensions—it was impossible to attract the best men to the Irish Poor-law medical service.

Belfast District Lunatic Asylum.

Dr. W. Graham has just published, as resident medical superintendent, the seventy-fifth annual report of the Belfast District Asylum for the year ending Dec. 31st, 1904. The total number of patients under treatment was for the 12 months 1325—that is 633 males and 692 females. There were 100 deaths and 154 discharges and the admissions showed an increase of 12 as compared with the previous year. 79 patients were during the year transferred from the Belfast workhouse, making a total of 673 received from that institution during the past seven years. Dr. Graham says:—

It is interesting to note—as illustrating the mental and physical characteristics during the past seven years of these workhouse cases—that, apart from the low recovery-rate and high death-rate, there is actually an average of 53 per cent. yet remaining of those admitted, while in the year 1900, when the total admissions from the entire district were 379—one-half of which (188) were received from the workhouse—the number of workhouse cases yet remaining is 107, as compared with 32 received direct from the patients' own homes. In other words, of the 139 patients remaining from the 379 admitted 107 are transfers from the workhouse and 32 are direct admissions. The influence of these transferred cases in reducing the recovery rate of the asylum is thus clearly evident.

Dr. Graham points out that an asylum is not the proper place for the education and training of idiots and imbeciles, and although the attention of the Government has been drawn to the necessity of a better provision for such cases so far no relief has been obtained. The percentage of recoveries during the year, calculated on the admissions, is 41·0, as compared with 33·5 for the preceding year. The death-rate was 9·5 per cent., calculated on the total number under treatment, the principal feature in the mortality being again the large and increasing number of deaths—23—due to general paralysis of the insane. Nine deaths were due to phthisis and four to tuberculosis. There were no deaths from accident or suicide. The most important event of the year was the purchase in August of two farms adjoining the asylum and consisting of about 54 acres, by the acquisition of which the county road becomes the natural boundary of the asylum estate. As a result the villa colony runs no risk of encroachment from other buildings. The gross expenditure for the financial year ended March 31st, 1905, amounted to £23,958 7*s.* 8*d.*, being a net capitation cost of £21 4*s*, or £1702 13*s.* 2*d.* less than the preceding year. Of the entire expenditure £10,489 0*s.* 9*d.* have been defrayed by the Government contribution of 4*s.* per week per head and £1610 2*s.* 7*d.* have been received from farm produce, paying patients, and miscellaneous sources, leaving £11,859 4*s.* 4*d.* to be paid by the city rates, or £11 4*s.* 7*d.* as the average annual expense of each patient chargeable to the city. The "memorandum of inspection" (made by Sir G. P. O'Farrell, inspector of lunatics) and a series of 30 tables are appended, all of which give interesting particulars (medical and otherwise) concerning the asylum and its inmates. Special mention is made of the original work done in the pathological laboratory of the asylum by Dr. R. A. L. Graham.

The Rainfall in August.

The August of 1905 will long be remembered in Ireland owing to the extraordinary deluge of rain which occurred on Friday and Saturday, 25th and 26th of that month. In the 24 hours ending at nine o'clock in the morning on August 26th the rainfall gauges at Trinity College, Dublin, showed that 3·3 inches of rain had fallen, while at Greystones, co. Wicklow, the record was 3·4 inches. On no previous occasion within the last 40 years have three inches of rain fallen within 24 hours in Dublin. As a result, Little Bray (through which the river Dargle, a mountain stream, flows) was flooded out and an immense amount of damage was done, the people being obliged to fly from their houses in the village. A relief fund has been started for them. In the north of Ireland it rained continuously for 39 hours, the record being 2·95 inches. The total rainfall in Ulster for August, 1905, was 7·82 inches, which fell on 21 days, the corresponding amount in 1904 being 4·73 inches. As a result of the great spate considerable damage was done in the districts flooded by the river Bann and the river Lagan, but, on the other hand, it proved of much value to the places where water was becoming short in amount. For example, the quantity of water now in store in the Belfast reservoirs is slightly in excess of 1904, while previously to August 25th it was much lower.

Sept. 5th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Accidents to Workmen in Tongking.

A COMMISSION has recently been appointed at Hanoi to hold an inquiry and to initiate legislation on the subject of accidents in connexion with their employment happening to

wage-earning Europeans and natives. The president of this commission is a magistrate of high rank and the members include delegates of various local undertakings, tradesmen nominated by the chambers of commerce, an agriculturist nominated by the chamber of agriculture, and M. Leroy des Barres, a professor in the school of medicine at Hanoi. Administrative officials and a high mandarin will also take part in the proceedings.

Hydrophobia communicated by Licking with the Tongue of a Rabid Dog.

At a recent meeting of the Société Médicale des Hôpitaux de Lyon M. Paviot and M. Nicolas described a case showing the danger of being licked by a rabid animal. The holder of a small farm, a man 36 years of age, had a bitch which was bitten on July 3rd, 1904, and died from hydrophobia on a date which the patient estimated as being between July 14th and 17th. This bitch was suckling a puppy, which was at that time three weeks old, and about a month afterwards it presented the same symptoms as its mother—namely, aversion to water, laryngeal spasm which prevented deglutition, convulsions, and finally paralysis; the animal did not drink and had no propensity to bite; it was killed by the patient about August 15th. The patient was perfectly certain that he had never been bitten by any of his dogs but he had several times been licked by them on his hands, the skin of which was quite sound according to his statements; he might not, however, have remembered all the circumstances and it was probable that the skin might have been cracked. The patient having no suspicion of danger did not speak of the matter and was not treated by Pasteur's method. His health remained excellent until on Sept. 22nd, exactly five weeks after the death of the dog, he had a restless night and suffered from vomiting, diarrhœa, distaste for food, and epigastric pain. At the same time he had symptoms of nervous irritability, anxiety, and distress. A medical man who was sent for thought at first that the case might be of gastric origin, but on the second and third days the symptoms included terror at the sight of liquids and became characteristic of the disease. On further inquiry the medical man was told about the dogs and the patient was sent to the antirabic institute at Lyons, where he died in 48 hours with convulsive attacks of extreme violence. Rabbits which were inoculated with his cerebro-spinal fluid or with portions of his central nervous system (cerebrum, cerebellum, and bulb) all showed characteristic symptoms and all died from hydrophobia after an interval varying from 15 to 20 days. The inference was that a person who has been licked by a dog which was either rabid or suspected of rabies ought to consider himself in danger if the animal's saliva has come in contact with fissures in the skin or even with newly shaven surfaces.

Hygroscopic Substances as Dust Preventers.

M. Philibert Delair has recently suggested a new method by which the dust that settles on floors may be prevented from rising. He recommends that floors should be wetted with a solution of chloride of magnesium, a very hygroscopic salt which will cause the floor to remain damp for some time; the dust is thereby moistened and can be swept up without rising in the air as usual. Two applications of a solution of chloride of magnesium at an interval of some days will render a floor capable of fixing the dust for six months. Floors treated in this way preserve for a long time a remarkably clean appearance as if they had been newly washed.

The Workmen's Compensation Act.

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steel mantle, which tends to prevent distortion, they did not cause any great amount of bruising in and around the wound; the orifices of entrance and exit were very small, and the case often presented the appearance of a mere penetrating wound, so that the surgeons were liable to be misled by the slightness of the external appearances, and were then often astonished to find by radiography that there were extensive destruction of the bones and much production of splinters, together with fissures leading into the joints. Dr. Schäfer says that the utility of radiography has become remarkably evident in this war and that it is very desirable that army medical officers should be provided with portable Roentgen apparatus of the pattern issued to the German contingent in the Chinese expedition. Simple perforations of bone were rather rare, and it was difficult to say why in some cases the bullets had an explosive action and in others not; probably the distance from which a bullet had been fired was an essential factor. The work of the Russian surgeons on the battlefield was limited to first aid and the application of bandages, as they had been previously instructed to abstain as much as possible from operations. They were rather disappointed by this order but Dr. Schäfer is of opinion that it was a very reasonable one, for on the battlefield it is hardly possible to give due attention to the minutiæ of a surgical operation, and cases in which an operation cannot be postponed till the patient is conveyed to hospital are not very common. Surgeons who had served from the beginning of the campaign told Dr. Schäfer that they had not seen any case where an operation could not be postponed. Immediate operations might become necessary, especially in the case of profuse hæmorrhage from large arteries, but owing to the small size of the wounds of entry and exit the hæmorrhage stopped spontaneously as a rule, so that the temporary application of a caoutchouc bandage was sufficient. Tracheotomy and urethrotomy were seldom performed on the battlefield; tracheotomy was once performed on a Japanese who was wounded in the foot and had attempted to commit suicide by cutting his throat with his own sword to escape capture by the Russians. The number of amputations was relatively small, being 322 among 63,346 wounded, or 0·5 per cent. The conservative method was generally adopted in wounds of the extremities which had a marked tendency to heal. In wounds of the skull, however, operative measures at an early stage are to be recommended, for spontaneous recovery is rare when the cranial bones contain a cavity filled with broken-down brain substance and splinters of bone. In these cases it is a mistake to wait until alarming symptoms have developed. Primary laparotomy was seldom necessary; when the patients came to the hospital either adhesions had formed or general septicæmia had become established. Aneurysms were often met with; the question when this condition is to be operated on is not yet settled. Rifle or shrapnel bullets as a rule do not cause infection of the tissues to nearly the same extent as splinters of shell do; the latter have also a special tendency to bring about gangrenous emphysema (*Gasphlegmon*)—a condition which is invariably fatal.

Sept. 4th.

ROME.

(FROM OUR OWN CORRESPONDENT.)

The Clinics at the Policlinico of Rome.

THE work of equipping the various clinics at the Policlinico is proceeding so satisfactorily that there is every hope of its being completed before the opening of the approaching winter session. The old medical clinic at Santo Spirito will shortly be vacated by Professor Baccelli and handed over to the Ministry of Public Works to be demolished and to make room for the fine boulevards along the western bank of the Tiber, the completion of which it has so long obstructed. Professor Durante's clinic in the Via Garibaldi has already been abandoned to the Ministry of the Interior and will in future form part of the school for training the city police. The new buildings at the Policlinico provide ample space for these two clinics as well as for the clinics of special medical pathology, of obstetrics, of ophthalmology, of oto-laryngology, and of pediatry. This concentration of different departments under one roof will prove an immense boon to the Roman medical student whose time has hitherto been sadly wasted in traversing the long distances which separated them under the old *régime*, and will likewise help greatly to reduce expenditure by lessening administrative expenses. This noble hospital, so complete in every respect and so admirably equipped as it now is for teaching purposes, adds one more to the many advantages which Rome possesses for the study of medicine—advantages, by the way, which have been utilised by the foreign student or foreign post-graduate to a singularly small extent. There is certainly no lack of distinguished men on the teaching staff, eminent alike for original research and for teaching ability—as witness the names of Todaro in anatomy, Luciani in physiology, Marchiafava and Bignami in pathology, Baccelli in medicine, and Durante and Postemski in surgery; the class-rooms and laboratories are admirably equipped and are open to all comers on payment of relatively small fees; and there is a wealth of material in hospital and dead-house available for clinical and scientific purposes. When to these facilities for study are added the delights of residence in Rome, its social and intellectual advantages, and the attraction of its unequalled treasures, archæological, literary, and artistic, it is a surprising fact that a British or an American student scarcely ever enters the precincts of its University or is ever to be found in the wards of its hospitals. The time has certainly come when Rome might fitly take a more prominent place in the estimation of the many English-speaking students who frequent continental medical schools and who at present turn their steps by preference to the crowded clinics of Paris, Berlin, or Vienna.

A Medical Political Party.

The increase in the number of medical men returned as deputies to the present Italian Parliament has led to the proposal that these members should unite to form a Parliamentary medical party prepared to sink their differences on general politics and to present a united front whenever any subject came up for discussion involving the many grave problems of public sanitation or the legitimate interests of the medical profession. This suggestion has taken concrete form in the shape of the "Fascio Medico Parlamentare," a body which consists at present of 30 members, including, amongst others, the names of Baccelli, Casciani, Queirolo, Rummo, Sanarelli, Santini, and Santoliquido, all men of position and influence in Parliament and in the profession. (One misses, however, the name of Celli.) In November next it proposes to hold at Rome a "General Sanitary Congress for the Promotion of Professional Interests," inviting all the *medici condotti*, the sanitary officers, pharmacists, and veterinary surgeons of the kingdom to participate in it. This congress will be the first of its kind called together under the auspices of a medical political party and, it is anticipated, will prove most useful by bringing the whole sanitary service of the country into contact with its representatives in Parliament. The mode of working of the new political party will be closely watched by the medical profession not only in Italy but in other countries where its interests and those of public sanitation are neglected by the legislatures even more than they are here. Much has already been effected in this direction by the individual efforts of a few medical deputies such as Bossi and Celli; much more may fairly be expected from the united action of the united medical party. Even in general politics its numbers would be already sufficient to insure respect for its views; in strictly medical questions its special knowledge should make its influence in the Chamber of Deputies supreme.

August 25th.

NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

Panama Canal Work Stopped.

IT is reported that active engineering operations on the Isthmus of Panama are to be suspended for a period of six months. This is partly on account of the necessity for the erection of quarters, tracks, wharves, &c., and the installation of suitable machinery of many sorts, but more especially in order to permit the work of sanitation to be pushed more energetically. It has become evident that this task is one of much greater magnitude than had been supposed and that it must be carried out with the greatest thoroughness

before the actual work of digging can be performed in a satisfactory way. Chief Sanitary Officer Colonel Gorgas has already accomplished much and with the added opportunities now given him will no doubt obtain results as notable as those he achieved in Cuba.

The Study of Tropical Diseases.

The new territorial possessions of the United States have greatly stimulated interest in the study of tropical diseases and conditions of life. The current medical literature contains many contributions on such subjects and at the recent meeting of the American Medical Association it was proposed to establish a section on tropical diseases.

The Decreasing Birth-rate in America.

Much amusement has been caused by a recent action of the self-styled prophet, Elijah Dowie, who is the leader of a religious sect that has a very extensive settlement at Zion city, Illinois. Dowie has not only announced that every marriage among his followers must have his written authorisation before it can be solemnised, but has also issued a command that every married couple shall add one child to the population of Zion city every year. This is seconding President Roosevelt's anti-race-suicide campaign with a vengeance. The Census Bureau has issued an interesting bulletin dealing with the proportion of children in the United States. It does not attempt to estimate the actual birth-rate but indicates the proportion of children under five years of age to the number of women in the child-bearing period at different times in the country's history. These figures appear to show that since 1800 there has been a steady decrease in the birth-rate, for in 1860 the proportion of children to 1000 potential mothers was 634, while in 1900 it was only 474. The two States with the largest proportion of children were North Dakota and Indian Territory and the State with the smallest relative number of children was Massachusetts with only one-half of the percentage of North Dakota. In 1900 the proportion of children in cities was only two-thirds as great as in the country districts. The foreign-born women exhibit a much greater fecundity than the native-born.

Music for the Insane.

The effect of music as a mental sedative was recently tested on 400 patients of the asylum for the insane at Dunning, Illinois. Many of them were from the violent wards but during the two hours that the experiment lasted they manifested the greatest decorum and from the first number on the programme to the last they listened with rapt attention and frequent applause.

Disease among New York School Children.

A very unfortunate condition of affairs has been revealed by an investigation recently conducted by the health department of New York city. Early in the spring an official inquiry was made to ascertain how many of the pupils in the public schools left their homes either wholly breakfastless or insufficiently fed. The information obtained indicated so deplorable a state of affairs that the inquiry was extended in order to obtain some idea of the actual state of health of these children. Four schools were selected from the poorer districts, but not from the worst quarters, in order that average results might be secured, and 100 inspectors were appointed to make complete physical examinations of the children who attended them. It was found that 6294 children of the 13,941 examined required medical attention in one way or another. Bad teeth, defective vision, and swollen cervical glands were the commonest defects, more than 3000 instances of each condition being discovered. A large proportion of the children considered dull by their teachers were found to be affected with either poor sight or hearing or both. The fact that almost every other child in the schools should be in need of medical treatment is a terrible reflection on the conditions of city life, and extensive plans have already been made for a system by means of which every child found defective in any way will be followed up until it is known that the parents have secured proper treatment for the sufferer.

Typhoid Fever in New York and Elsewhere.

The seasonal outbreak of typhoid fever promises to be of unusual severity all over the country this year. New York has been unusually unfortunate in this respect for during the two weeks ending August 19th 500 cases had been reported, whereas for the corresponding period of 1904 there were much less than half that number. 300 of the cases this year occurred in the borough of Brooklyn where the water-supply seems to be infected seriously. Washington reports over 300 cases since the beginning of July and Philadelphia has also been the seat of a notable epidemic.

The Epidemic of Yellow Fever.

The situation in New Orleans has changed greatly for the better since the officials of the United States Public Health and Marine Hospital Service took charge, and already some of the experts are predicting that the disease will be stamped out within a month. The epidemic has in many respects resembled that of 1878 but it is now beginning to differ from this in the effectiveness of the sanitary measures. The quarantines are being enforced with more reason and less violence now that the people are beginning to realise the correctness of the mosquito theory. Sunday, August 20th, was sulphur day and by common consent all householders of Southern Louisiana fumigated their dwellings with brimstone or pyrethrum, so that very few mosquitoes are left alive in the towns. The chief obstacles now to be conquered lie in the ignorance and hostile attitude of the Italians. These refuse to carry out the instructions of the officials both as regards the care of the sick and the sanitary regulations, and in numerous instances the necessary measures have had to be enforced by violence. The number of cases so far has reached a total of over 1500, with a mortality of about 16 per cent., but it is believed that the acme of the epidemic has been passed.

August 28th.

NOTES FROM INDIA.

(FROM OUR SPECIAL CORRESPONDENT.)

Opportunities offered for Inoculation against Plague.

IN the two cities of Calcutta and Bombay the inhabitants have every opportunity offered to them of protecting themselves against plague by the process of inoculation. In Bombay inoculation is done at the ten municipal dispensaries by qualified medical men who have been specially instructed, facilities are given for persons to be inoculated in their own homes, and for females a lady operator can be secured if desired. In Calcutta the four district offices are utilised and the operation is done by the officers of the plague department (qualified English medical men). In neither city have the people taken advantage of this protection except to a small extent. In the olden days those who were inoculated avoided some of the vexatious restrictions of the plague regulations and since these have been nearly all withdrawn the native of India apparently cannot understand what benefit he will derive from it. An excellent scheme has been adopted by the Mill Owners' Association in Bombay for furthering inoculation amongst the mill hands. They will first of all be instructed concerning inoculation and its advantages. Those who will take advantage of it will be allowed a day's leave and a policy for one year of Rs.50 in the case of death from plague. The Bombay mills employ 78,000 people. The mill owners have found how disastrous the scourge has been to them, not only in money but in trained hands.

The Present Small Mortality from Plague.

The returns of deaths from plague are now of little interest. For the week ending July 22nd 1122 deaths were reported and in the week ending July 29th only 1024 deaths occurred. The latter numbers were distributed as follows: Bombay Presidency, 615; Burmah, 147; Punjab, 128; and Mysore State, 68. The town of Moulmein in Burmah has become infected and has had to be declared an infected port. There are now 13 districts in Burmah slightly infected so that when the time comes for the revival of the infection the prospects in this province will be very gloomy.

Mad Dogs.

The Seistan mission was much troubled by mad dogs and I now hear that a similar trouble continues in Baluchistan. No fewer than seven men of the 32nd Lancers have been bitten while at Loralai and have had to be sent to the Kasauli Institute for treatment.

Profits on the Manufacture of Quinine.

The Madras Government is reported to have made profits on the manufacture of quinine last year to the extent of Rs.33,000. The output of sulphate was 12,920 pounds and the cost of production and manufacture was about Rs.11

per pound. As the price obtained for it was over Rs.13 the profit is explained. More than 2,000,000 seven-grain packets were supplied to post offices for convenience of distribution and sale at one pice (a farthing) a packet.

Further Concessions for the Indian Medical Service.[1]

A Royal Warrant recently published in the *Gazette* of India amends rules of promotion and precedence in the Indian Medical Service. The director-general will hold the substantive rank of surgeon-general but may rank as lieutenant-general when approved by the Secretary of State. The director-general goes on the retired list at 62 years of age. A captain shall be promoted to the rank of major on completing 12 years' full-pay service but this period may be reduced by six months in the case of an officer who produces satisfactory evidence of knowledge which is likely to increase his efficiency. This article of the warrant means that modest men will have to push themselves forward and to urge their own claims. Another substitution in the previous warrant is that "except as otherwise herein provided a major shall be promoted to the rank of lieutenant-colonel on completing eight years' full-pay service in rank of major." An addition to previous Article 10 is: "An officer below the rank of colonel who may be appointed as an honorary physician or surgeon after retirement from service shall be granted the honorary rank of colonel."

The Report on the Sanitary Condition of Simla.

A further report on the sanitary condition of Simla has been presented. From it I learn: "It is commonly reported that 90 per cent. of the milk consumed in Simla is brought in daily from villages in the neighbourhood. The villagers keep their cows in byres, filthy and unventilated, situated outside municipal limits in native States. It is impossible to inspect and regulate these cow byres. The villagers carry their milk in vessels open to contamination. They often wash these in dirty pools from which they also probably take water to increase the quantity of milk by dilution." This description does not announce a discovery because the same conditions exist all over India. There can be no guarantee for a supply of pure milk until the dairy and distributing agency are placed wholly under British control. The report goes on to say: "For many years Simla had only three sewers in which all the night-soil of the Main Bazar, Chota Simla, and Boileauganj were discharged. This entailed the carriage from long distances of receptacles on the heads of the sweepers. To lessen their work the sweepers often emptied the contents of the receptacles into any handy ravine." This description also expresses a similar condition prevalent over very many parts of India, including the towns. It appears that there is a hospital for natives in Simla to which small-pox patients and those suffering from infectious diseases are taken. This hospital is situated above the new cemetery close to private residences and to a collection of native houses. The Sanitary Investigation Committee further reports that the rate of filtration of the drinking water is too rapid for absolute safety; that the laundry system is dangerous; that all the bazaars are greatly overcrowded with an average of 17 inmates per house compared with an average of five inmates per house in the big towns of the Punjab; and that the private habits of natives are a standing menace to the sanitary wellbeing of the station and that the harbouring of enormous hordes of pack animals at particular places in Simla with no provision for keeping such places clean is a permanent source of pollution. These accounts simply bring to light the absence of forethought and neglect of action anticipatory of the growth of such insanitary conditions. They should have been expected and provided against. Even with their eyes wide open the authorities allow these things to develop. It is the same all over India. Large sums of money are spent on education but the children are allowed to grow up in filth. At the same time as this report is issued about the insanitary state of Simla vital statistics are published apparently with the object of showing what a healthy station it is. With a native population of some 30,000 the rate of mortality is put down at 13·7 per 1000 per annum. This is absurd and obviously shows that the system for the registration of deaths is on a par with the sanitary state of the station.

Cholera in Madras.

The cholera epidemic in Madras city is steadily increasing, the total number of attacks since the middle of July being 1500, with about 1000 deaths. Many cases have occurred amongst the European and Eurasian populations and a European cholera ward has had to be fitted up in one of the hospitals.

Obituary.

I regret to have to record the death of Dr. C. H. Cayley, one of the divisional health officers of Bombay. It appears that some little time ago he hurt one of his fingers, the injury being apparently of comparatively little importance, but tetanus developed and, notwithstanding that an operation was performed, he died after a few days' illness. Dr. Cayley was one of the English medical men who came out several years ago for plague work but was subsequently elected by the Bombay municipality as one of its health officers.

August 17th.

[1] This information has been published in the Students' Number of THE LANCET (Sept. 2nd, 1905, p. 715), but in view of the particular circulation of that number we think it may well be repeated.—ED. L.

Obituary.

FARQUHAR MATHESON, M.B., C.M. ABERD., J.P.

Dr. Farquhar Matheson, who died on August 23rd at Soho-square, was born at Dornie, Kintail, Ross-shire, in May, 1840. Educated at the Universities of Glasgow and Aberdeen he graduated M.B., C.M. at the latter in 1868 and after holding appointments in several provincial towns he came to London in 1870 and eventually became surgeon to the Royal Ear Hospital, an appointment which he held till the time of his death. Dr. Matheson took special interest in Scottish affairs and in aiding Scottish students entering the universities. As honorary surgeon to the Royal Scottish Hospital, honorary secretary of the Highland Society, ex-president of the Gaelic Society of London, and surgeon to the London Scottish Volunteers, he devoted a great part of his time to the interests of Scotsmen in London. He was J.P. for the county of Middlesex and took an active part in the affairs of the Westminster district. The funeral took place at Lochalsh, Ross-shire, on August 29th, with Highland honours.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Bernhard Heinrich Laehr who may be looked upon as the *doyen* of German alienist physicians, having been born in 1820. He was especially eminent as an organiser of asylums and founded the *Allgemeine Zeitschrift für Psychiatrie*.—Dr. Karl Schweigger, formerly professor of ophthalmology in the University of Berlin, at the age of 75 years. His student days were spent in Erlangen and Halle and his first teaching post was under Professor Krukenberg, the Halle professor of internal medicine. He afterwards worked for many years under Heinrich Müller in Würzburg and von Graefe in Berlin. He also travelled a great deal, visiting ophthalmological clinics in Utrecht, London, and America and was appointed to succeed his old master von Graefe in 1871. His published works include a well-known "Manual of Ophthalmology," "Lectures on the Ophthalmoscope," and "Researches on Strabismus." He was for many years editor of the *Archiv für Augenheilkunde*. He was a great operator and introduced various ophthalmic operations or modifications of such. He was forced to retire from active work some six years ago by the state of his health.—Dr. Otto von Büngner, director of the Hanau Hospital and formerly assistant in von Volkmann's Surgical Clinic in Halle. He was 47 years of age.—Dr. Paul Schubert, an eminent authority on school hygiene. He died at Nürnberg and was in his fifty-sixth year.—Dr. Adam Kunkel, professor of pharmacology in Würzburg at the age of 57 years.

LLANWRTYD WELLS, CENTRAL WALES.—With a view to the obtaining of powers for further development negotiations are now in progress for forming this health resort into an urban district. At a meeting of the Brecon-shire county council dealing with the matter it was contended that the development of this spa meant the development of Breconshire.

Medical News.

FOREIGN UNIVERSITY INTELLIGENCE.—*Florence:* Dr. Domenico Taddei of Padua has been recognised as *privat-docent* of External Pathology.—*Freiburg:* Dr. Adolf Oberst has been recognised as *privat-docent* of Surgery.—*Halle:* Dr. Gabriel Anton has been offered the chair of Mental Diseases and Neurology in succession to the late Professor Wernicke.—*Königsberg:* Dr. Otto Voss has been recognised as *privat-docent* of Ear Diseases.—*Leipsic:* Dr. Sudhoff, whose writings on Paracelsus are well known, has been appointed Extraordinary Professor of the History of Medicine. The chair is endowed by the widow of Dr. Theodor Puschmann in memory of her husband, the eminent medical historian.

BUBONIC PLAGUE IN PERU.—Mr. Consul-General St. John, in a despatch from Lima to the Foreign Office, writes: "Bubonic plague exists at present in an endemic form in a number of places on the coast of Peru. Since the first cases were reported in May, 1903, to the end of 1904, 1110 cases were reported, of which 558 terminated fatally. Many more cases must have escaped detection, as there has always been an extreme disinclination on the part of the poorer classes to avail themselves of the medical assistance given in the lazarettos, although it is considered that in the Lima lazaretto especially the treatment has been successful. The Lima local administration deserves credit for the manner in which it has coped with the evil, but the hygienic condition of all the towns still leaves a good deal to be desired. Sanitary stations have been established at Paita, Callao, and Ilo for the disinfection of ships by the Clayton apparatus. Quarantine is practically abolished unless deaths or suspicious cases have occurred during the voyage. Owing to the existence of the plague all along the coast and small-pox in the south passengers are compelled to observe various regulations as regards medical examination, the disinfection of luggage, and vaccination."

THE PREVENTION OF ANTHRAX AMONG WOOL-SORTERS.—The *Engineer* of August 25th contains a long and copiously illustrated description of some new mechanical and structural arrangements which have been made in certain woollen factories with a view to the prevention of anthrax among the operatives. This disease is well known to run a very short course and to be extremely fatal, although cases of recovery have sometimes been recorded in our columns. The instructions issued by the Home Office state that anthrax is rare among the sheep of Great Britain and Australia, but that in China, Persia, Turkey, Russia, the East Indies, and many other parts of the world the disease is common. Infected fleeces, which may not differ from others in appearance, are often shipped to Great Britain. The wool from animals which have died from the disease is often packed with good wool and may infect the whole bale. These are termed "fallen" fleeces and it is in handling them that the strictest precautions must be taken. The wool-sorting rules therefore provide that the bales shall only be opened for the purpose of sorting by men skilled in judging the quality and condition of the material. The hair of the Angora or Cashmere goat, the llama, the alpaca, and the camel must be opened over a fan producing a downward draught in a room specially set apart for the purpose, quite separate and distinct from the sorting room, or from any room in which work other than opening is carried on. The most dangerous varieties, such as Van, mohair, and Persian, may only be opened after being thoroughly steeped in water and all damaged wool or "fallen" fleeces must, when opened, be damped with a disinfectant. The opening screen must not be less in area than 12 square feet and both its length and breadth must be at least three and a quarter feet. The velocity of the exhaust draught at any point of the screen within 18 inches of the centre must not be less than 150 linear feet per minute. The sorting room, exclusive of portions screened off, must provide an air space of at least 1000 cubic feet for each person employed. The dust carried by the exhaust draught from the opening screen and sorting boards must be discharged into a properly constructed settling chamber or receptacle and not into the open air. In the sorting room of Messrs. Firth, Crossley and Company, of Bradford, some improvements have recently been carried out by the Sun Fan Company, Limited. The sorting boards are ranged round two sides of the room, which is well lighted from the roof, and ample space is provided to the rear of the sorters for the "skeps" containing the sorted wool. Beneath the sorting benches runs the exhausting shaft, gradually increasing in diameter towards the fan so as to obtain a uniform draught from each board. The fan chamber, the settling chamber, and the opening room are partitioned off at one end of the sorting room. The settling chamber is of such dimensions and height that the dust falls slowly to the floor, none escaping at the turret outlet fixed on the roof. With a view to further reducing the possibility of discharging dust into the outside air the use of the cyclone dust collector has been adopted by Messrs. Matthews and Yates, Limited, of Manchester. It has been found that dust collectors which strain the air through filters of cloth or similar material not only set up considerable resistance to be overcome by the fan but in addition are difficult to clean and soon become quite choked in consequence.

LITERARY INTELLIGENCE.—A Life of Sir Henry Vane, at which Dr. William W. Ireland has been working for more than four years, will be published in October by Eveleigh Nash, London.

DEATH OF A CENTENARIAN.—Mrs. Amelia Oliver died at Newquay, Cornwall, on August 28th, aged 101 years.

BOOKS, ETC., RECEIVED.

ARNOLD, EDWARD, 41 and 43, Maddox-street, Bond-street, W.

Practical Physiology. By A. P. Beddard, M.A., M.D.; Leonard Hill, M.B., F.R.S.; J. S. Edkins, M.A., M.B.; J. J. R. Macleod, M.B.; and M. S. Pembrey, M.A., M.D. Second edition. Price 12s. 6d. net.

ASH AND CO., LIMITED, Henry-street, Tooley-street, S.E.

Guy's Hospital Nursing Guide, Handbook of Nurses' League, and Register of Nurses Trained at Guy's Hospital. 1905. Third issue. Price 1s. 6d.

BAILLIÈRE, TINDALL, AND COX, 8, Henrietta-street, Covent Garden, W.C.

Cattle Tuberculosis. A Practical Guide to the Agriculturist and Inspector. By Harold Sessions, F.R.C.V.S., F.R.A.S., F.R.G.S., formerly Lecturer, Oxford University Extension and Sussex County Agricultural College. Second edition. Price 3s. net.

CAXTON PRESS, LIMITED, 15, Furnival-street, Holborn, E.C.

The Bodie Book. Hypnotism, Electricity, Mental Suggestion, Magnetic Touch, Clairvoyance, Telepathy. By Walford Bodie, F.R.M.S., M.R.S.A., &c. (Fellow of the Royal Meteorological Society, Member of the Royal Society of Arts, Freeman of the City of London, Fellow of the Royal Colonial Institute, M.D. and C.M. Barrett College, Ph.D. and D.Sc. Chicago College of Medicine and Surgery). Price 2s. 6d.

CLARK, R. AND R., LIMITED, Brandon-street, Edinburgh.

Clinical Studies. A Quarterly Journal of Clinical Medicine. By Byrom Bramwell, M.D., F.R.C.P.E., F.R.S.E., Physician to the Edinburgh Royal Infirmary, Lecturer on Clinical Medicine in the School of the Royal Colleges, Edinburgh. Vol. III. Price 9s.

FALCONER, JOHN, 53, Upper Sackville-street, Dublin.

Transactions of the Royal Academy of Medicine in Ireland. Vol. XXIII. Edited by James Craig, M.D., F.R.C.P.I., General Secretary; Physician to the Meath Hospital and County Dublin Infirmary. Price not stated.

FISCHER, GUSTAV, Jena.

Beiträge zur Typhusforschung. Von Dr. J. Borntraeger, Regierungsund Medizinalrat in Düsseldorf, Dr. Lentz, Kreisassistenzarzt in Idar a.d. Nahe, Dr. Julius Tietz in Idar a.d. Nahe, Stabsarzt Dr. Seige in Saarlouis und Stabsarzt Dr. Vagedes in Berlin. Abdruck aus dem Klinischen Jahrbuch. Vierzehnter Band. Price M.3.

GLAISHER, HENRY J., 57, Wigmore street, Cavendish-square, W.

A Plea for the More Energetic Treatment of the Insane. By Charles Williams, L.R.C.P., L.R.C.S., L.S.A., formerly Resident Assistant Medical Officer, Heigham Hall Asylum; Junior Medical Officer, Shaftesbury House Asylum, &c. Price 1s. 6d. net.

GRIFFIN, CHARLES, AND COMPANY, LIMITED, Exeter-street, Strand, W.C.

Smoke Abatement: A Manual for the Use of Manufacturers, Inspectors, Medical Officers of Health, Engineers, and others. By William Nicholson, Chief Smoke Inspector to the Sheffield Corporation. Price 6s. net.

Clinical Diagnosis: The Bacteriological, Chemical, and Microscopical Evidences of Disease. By Rudolf v. Jaksch, M.D., Professor of Special Pathology and Therapeutics, Director of the Medical Clinic in the German University of Prague, Ordinary Member of the Supreme Sanitary Council. Fifth English edition. Based upon the fifth German edition, but containing additional Matter and Illustrations. Edited by Archibald E. Garrod, M.A., M.D., F.R.C.P., Assistant Physician to, and Lecturer on Chemical Pathology at, St. Bartholomew's Hospital. Price 24s. net.

HÉBERT, MADAME M. H., *Guardian* Office, Sheerness.
French Pronunciation Made Easy. By M. H. Hébert, Teacher of the French Language. Third edition. Price 6d.

JOHN BALE, SONS, AND DANIELSSON, LIMITED, 83-91, Great Titchfield-street, Oxford-street, W.
Pharmacopœia and Formulary of the Royal Dental Hospital of London. Price 1s. 6d. net.

KING, P. S., AND SON, Orchard House, Westminster, S.W.
The Brassworkers of Berlin and of Birmingham: A Comparison. Joint Report of R. H. Best, Chairman of Best and Lloyd, Ltd., Handsworth; W. J. Davis, Secretary of the National Society of Amalgamated Brassworkers and Metal Mechanics; and C. Perks, Canvasser and Representative of the Birmingham Hospital Saturday Fund and Member of the Committee of the General Dispensary, Birmingham. Price 1s. net.

LONGMANS, GREEN, AND CO., 39, Paternoster-row, E.C.
Higher Mathematics for Students of Chemistry and Physics. With Special Reference to Practical Work. By J. W. Mellor, D.Sc. Second enlarged edition. Price 15s. net.

MACMILLAN AND CO., LIMITED, London.
Simple Lessons on Health for the Use of the Young. By Sir Michael Foster, K.C.B., M.P., &c. Price 1s.

OFFICE OF THE SUPERINTENDENT OF GOVERNMENT PRINTING, INDIA, 8, Hastings-street, Calcutta.
Scientific Memoirs by Officers of the Medical and Sanitary Departments of the Government of India. New Series. No. 18. Hæmogregarina Gerbilli. By Lieut. S. R. Christophers, M.B., I.M.S. Price 10 annas, or 1s.

SAUNDERS, W. B., AND CO., 9, Henrietta-street, Covent Garden, W.C.
The Treatment of Fractures. With Notes upon a Few Common Dislocations. By Charles Locke Scudder, M.D., Surgeon to the Massachusetts General Hospital. Fifth edition, thoroughly revised. Price 21s. net.
Diseases of the Kidneys and of the Spleen: Hæmorrhagic Diseases. By Dr. H. Senator, Professor of Internal Medicine, University of Berlin, and Dr. M. Litten, Professor of Internal Medicine, University of Berlin. Edited, with additions, by James B. Herrick, M.D., Professor of Medicine, Rush Medical College, University of Chicago. Authorised translation from the German, under the editorial supervision of Alfred Stengel, M.D., Professor of Clinical Medicine in the University of Pennsylvania. (Nothnagel's Encyclopedia of Practical Medicine, English Edition.) Price 21s. net.

SKIPPER, CHARLES, AND EAST, 49, Great Tower-street, E.C.
Statistical Tables of the Patients under Treatment in the Wards of St. Bartholomew's Hospital during 1904. By the Medical Registrars, P. Horton-Smith Hartley, M.D. Cantab., F.R.C.P., T. J. Horder, M.D., and the Surgical Registrar, G. E. Gask, F.R.C.S. Price not stated.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BIRT, A. C., M.R.C.S., L.R.C.P., has been re-appointed to the Skin Department at St. Thomas's Hospital.

BLETSOE, J. H., M.B., B.S. Lond., M.R.C.S., L.R.C.P., has been appointed Resident House Surgeon at St. Thomas's Hospital.

BULLEY, F. M., M.A. Cantab., M.R.C.S., L.R.C.P., has been appointed House Physician to Out-patients at St. Thomas's Hospital.

COTTON, R. H., M.R.C.S., L.R.C.P., has been appointed to the Throat Department at St. Thomas's Hospital.

COUTTS, D. K., M.B., B.S. Lond., M.R.C.S., L.R.C.P., has been appointed Resident House Surgeon at St. Thomas's Hospital.

COX, E. J. H., M.R.C.S., L.R.C.P., has been re-appointed to the Throat Department at St. Thomas's Hospital.

CROSSLEY, LEONARD, M.D. Edin., has been appointed Senior Resident Medical Officer to the Royal National Hospital for Consumption, Ventnor, Isle of Wight.

DEAN, H. R., B.A., M.B., B.Ch. Oxon., M.R.C.S., L.R.C.P., has been re-appointed Resident House Physician at St. Thomas's Hospital.

DREW, J. H., M.B., B.S. Lond., M.R.C.S., L.R.C.P., has been appointed House Surgeon to Out-patients at St. Thomas's Hospital.

DREW, JOHN, M.D. Glasg., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Stirling District of the county of Stirling.

ELLIS, FRANCIS H., B.A., M.B., B.C. Cantab., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Assistant Resident Medical Officer at the London Open-air Sanatorium, Pinewood, Wokingham, Berks.

EYRE, C. R. B., M.R.C.S., L.R.C.P., has been appointed Junior Ophthalmic House Surgeon at St. Thomas's Hospital.

FALK, H., B.A. Cantab., M.B., B.C., M.R.C.S., L.R.C.P., has been appointed House Surgeon to Out-patients at St. Thomas's Hospital.

GRAY, H. T., B.A. Cantab., M.R.C.S., L.R.C.P., has been appointed House Surgeon to Out-patients at St. Thomas's Hospital.

GREENWOOD, T. PARKER, M.D., B.Sc., has been appointed Assistant Medical Officer at the County Asylum, Radcliffe, Notts.

HOOKER, A. W., M.B., B.S. Lond., M.R.C.S., L.R.C.P., has been appointed House Surgeon to Out-patients at St. Thomas's Hospital.

INMAN, A. C., M.A., M.B., B.Ch. Oxon., has been re-appointed Resident House Physician at St. Thomas's Hospital.

KEMP, FREDERICK W., M.B., B.Ch. Durh., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Junior House Surgeon at the Radcliffe Infirmary, Oxford.

KISCH, H. A., M.R.C.S., L.R.C.P., has been appointed Junior Casualty Officer at St. Thomas's Hospital

KNOWLES, THOMAS, M.D. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Gargrave District of the county of York.

LANGLEY, G. J., M.B., B.S. Lond., has been appointed Resident House Physician at St. Thomas's Hospital.

LECKY, R. C., M.B., B.Ch. Oxon., has been appointed House Physician at the Radcliffe Infirmary, Oxford.

MACKENZIE, JOHN W., M.D. Edin., has been appointed Assistant Member of the Medical Staff of the Northern Infirmary, Inverness.

MCDERMID, PETER, M.B., Ch.B., has been appointed Junior Physician to the Lancashire County Asylum, Winwick.

MEEK, W. O., M.R.C.S., L.R.C.P., has been appointed House Physician to Out-patients at St. Thomas's Hospital.

MORGAN, C. L., M.B., B.S. Lond., M.R.C.S., L.R.C.P., has been appointed Resident House Physician at St. Thomas's Hospital.

MOSSOP, E. E., M.B., B.S. Lond., M.R.C.S., L.R.C.P., has been appointed Senior Obstetric House Physician at St. Thomas's Hospital.

NEAVE, SHEFFIELD, M.R.C.P. Lond., M.R.C.S. Eng., has been appointed Assistant Physician to the North-Eastern Hospital for Children.

NORBURY, L. B. C., M.B., B.S. Lond., M.R.C.S., L.R.C.P., has been appointed Resident House Surgeon at St. Thomas's Hospital.

NORWOOD, WILLIAM L., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Bellanagh District of the county of Cavan.

PARRY, B. W., M.R.C.S., L.R.C.P., has been appointed Senior Casualty Officer at St. Thomas's Hospital.

PRICE, FREDERICK W., M.B., M.R.C.P., has been appointed Medical Registrar to Westminster Hospital.

PULLIN, THOMAS H. S., M.D. St. And., F.R.C.S. Edin., M.R.C.S. Eng., L.S.A., has been re-appointed Medical Officer of Health of Sidmouth, Devon, for three years.

REEDE, AUGUSTUS KEPPEL, L.R.C.P., L.R.C.S. Edin., L.A.H. Dub., has been appointed Medical Officer and Public Vaccinator for the Upottery and Dunkeswell Districts by the Honiton (Devon) Board of Guardians.

RICHMOND, JAMES R. MARR, L.S.A., has been appointed Medical Officer of Health for the West Penwith (Cornwall) Rural District.

ROUTLEY, EDWIN W., M.D. Brux., D.P.H. Cantab., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Medical Officer of Health of Aldershot and Medical Superintendent of the Isolation Hospital, North Town, Aldershot.

SINGTON, H. S., M.R.C.S., L.R.C.P., has been appointed to the Ear Department at St. Thomas's Hospital.

THOMPSON, R. J. C., M.R.C.S., L.R.C.P., has been appointed Resident House Surgeon at St. Thomas's Hospital.

WARD, W. C. A., M.R.C.S., L.R.C.P., has been appointed to the Skin Department at St. Thomas's Hospital.

WRIGHT, F. R. E., M.B. Lond., M.R.C.S., L.R.C.P., D.P.H., has been appointed Senior Ophthalmic House Surgeon at St. Thomas's Hospital.

WYATT, J. M., M.R.C.S., L.R.C.P., has been appointed Junior Obstetric House Physician at St. Thomas's Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BIRMINGHAM GENERAL DISPENSARY.—Resident Surgeon. Salary £150 per annum, with rooms, fire, lights, and attendance.

BRIGHTON, HOVE, AND PRESTON DISPENSARY.—House Surgeon. Salary £160, with rooms, coals, gas, and attendance.

BRIGHTON THROAT AND EAR HOSPITAL, Church-street, Queen's-road.—Non-resident House Surgeon for six months, renewable. Salary at rate of £75 per annum.

CARMARTHENSHIRE INFIRMARY.—Resident Medical Officer, unmarried. Salary £100 per annum, with apartments, board, attendance, washing, &c.

CROYDON GENERAL HOSPITAL.—Senior and Junior House Surgeons. Salary, senior position £105, junior position £90, with board, laundry, and residence.

DARLINGTON HOSPITAL AND DISPENSARY.—House Surgeon, unmarried. Salary £120, with board and lodging.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark, S.E.—Eight qualified Clinical Assistants.

GLASGOW DISTRICT ASYLUM, Woodilee, Lenzie.—Junior Assistant Medical Officer. Salary £125 per annum, with board, apartments, and washing.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway.—Senior House Surgeon, Senior House Physician, Two Junior House Surgeons, and One Junior House Physician for six months. Salary of senior officers at rate of £80 per annum and of junior officers at rate of £30 per annum, with board and residence.

HAMPSTEAD GENERAL HOSPITAL.—Resident Medical Officer for six months. Salary at rate of £120 per annum.

HASTINGS, ST. LEONARDS, AND EAST SUSSEX HOSPITAL.—Assistant House Surgeon. Honorarium 10 guineas for six months, with residence, board, and washing.

HEREFORDSHIRE GENERAL HOSPITAL.—House Surgeon. Salary £100 per annum, with board, apartments, and washing.

LEEDS, CITY OF, INFECTIOUS DISEASES HOSPITAL AND SANATORIUM.—Resident Medical Officer. Commencing salary £150 a year, with board, lodging, and washing.

LIVERPOOL, CITY OF, FAZAKERLEY HOSPITAL FOR INFECTIOUS DISEASES.—Medical Superintendent. Salary £400 per annum, increasing to £600, with house, coal, and lighting.

LIVERPOOL, DAVID LEWIS NORTHERN HOSPITAL.—House Surgeon. Salary £60, with board and residence.

LIVERPOOL INFIRMARY FOR CHILDREN.—Assistant House Surgeon for six months. Salary £30, with board and lodging.

LONDON TEMPERANCE HOSPITAL.—Assistant Resident Medical Officer for six months. Honorarium at rate of 50 guineas per annum, with board and residence.

MAIDSTONE, KENT COUNTY OPHTHALMIC HOSPITAL.—House Surgeon. Salary £100, with board.

MANCHESTER HOSPITAL FOR CONSUMPTION AND DISEASES OF THE THROAT AND CHEST.—Assistant Medical Officer for the Crossley Sanatorium, Delamere Forest, Cheshire. Salary £50 per annum, with board, apartments, and laundry.

MELBOURNE, UNIVERSITY OF.—Professor of Anatomy. Salary £900.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—Anæsthetist. Honorarium 25 guineas per annum. Also Assistant Physician. Also House Physician, House Surgeon, Assistant House Physician, and Assistant House Surgeon for six months. Salary of House Physician and House Surgeon at rate of £40 a year, and Assistant House Physician and Assistant House Surgeon at rate of £20 a year.

NORTHAMPTON GENERAL HOSPITAL.—Assistant House Surgeon. Salary £50 a year, with apartments, board, washing, and attendance.

READING, ROYAL BERKSHIRE HOSPITAL.—House Physician for six months. Salary £80 per annum, with board, lodging, and washing. Also House Surgeon. Salary £80 per annum, with board, lodging, and washing. Also Assistant House Surgeon. Salary £60 per annum, with board, lodging, and washing.

ROCHDALE INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with board, residence, and laundry.

ROYAL DENTAL HOSPITAL AND LONDON SCHOOL OF DENTAL SURGERY, Leicester-square.—Lecturer on Dental Surgery and Pathology.

ROYAL DENTAL HOSPITAL, Leicester-square.—Morning House Anæsthetist. Honorarium £50 per annum.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, E.C.—House Physician for six months. Salary at rate of £60 per annum, with board, lodging, and washing.

ROYAL LONDON OPHTHALMIC HOSPITAL (MOORFIELDS EYE HOSPITAL), City-road, E.C.—Senior House Surgeon. Salary at rate of £100 a year, with board and residence.

SUNDERLAND, MONKWEARMOUTH AND SOUTHWICK HOSPITAL.—House Surgeon. Salary £100 per annum, with board, lodging, and washing.

TAUNTON AND SOMERSET HOSPITAL.—Resident Assistant House Surgeon for six months. Salary at rate of £50 per annum, with board, lodging, and laundry.

TOTTENHAM HOSPITAL, London, N.—Honorary Anæsthetist.

WREXHAM INFIRMARY.—Honorary Ophthalmic and Oral Surgeon.

Births, Marriages, and Deaths.

BIRTHS.

COAD.—On Sept. 1st, at Elgin-avenue, Maida-vale, W., the wife of Dr. Stanley Coad, of a daughter.

FULLER.—On Sept. 1st, at Crescent-road, Crouch End, the wife of J. R. Fuller, M.D., B.S., of a daughter.

HINDS.—On Sept 3rd, at Tennyson-road, Worthing, the wife of Frank Hinds, M.D., of a son.

HODGSON.—On Sept. 2nd, at Westcliff-on-Sea, Essex, the wife of Victor James Hodgson, M.R.C.S., L.R.C.P., D.P.H. Camb., of a daughter.

PARKER.—On August 25th, at Hillside, Mooi River, Natal, the wife of Anthony Scott Parker, M.B. Edin., of a son.

TWEEDY.—On August 31st, at Abbey House, Kenilworth, the wife of Reginald Carlyon Tweedy, M.R.C.S., L.R.C.P., of a daughter.

MARRIAGES.

BOREHAM—BRAMSDON.—On Sept. 2nd, at Christ Church, Bloomsbury, H. W. Boreham, M.B., Ch.B., of Blaby, Leicestershire, only son of the late W. Todman Boreham, M.D., of Teignmouth, to Edith, second daughter of the late J. Bramsdon, of Bromley, Kent.

DE ZILWA—SACHS.—On August 12th, at Park Chapel, Arlington-road, Regent's-park, N.W., by the Rev. E. J. Dukes, Lucian Arnold Emmanuel de Zilwa, M.B., B.Sc. Lond., to Charlotte Eleanor (Lena), eldest daughter of Mrs. Sachs and of the late John Sachs, of Chancery-lane and Camden Town. No cards.

HARMAN—CHAMBERLAIN.—On Sept. 5th, at the Church of The Messiah, Birmingham, N. Bishop Harman, F.R.C.S., of Harley-street, London, to Katherine Chamberlain, M.B., third daughter of Arthur Chamberlain, Esq., of Moor Green Hall, Birmingham.

HAY—GROVES.—On August 30th, at Holy Trinity Church, Weymouth, by the Rev. Canon Weldon, D.D., Archibald Gilchrist Hay, M.A., M.D., to Mabel Constance, daughter of Sir John Groves.

MORISON—SIMONSEN.—On Sept. 5th, 1905, at Greenside Parish Church, Rutherford Morison, 14, Saville-row, Newcastle-on-Tyne, to Lull Simonsen, Mandal, Norway.

SPURRIER—CATO.—On Sept. 2nd, at All Saints Church, Upper Norwood, by the Rev. W. Taylor, Harry Spurrier, M.B., B.Ch. Cantab., M.R.C.S., L.R.C.P., to Mary, daughter of Wilson Robert Cato.

DEATHS.

GALLWEY.—On August 30th, at Suffolk-place, Pall Mall, London, S.W., Mathew Moriarty Gallwey, late Colonel, Royal Army Medical Corps.

HOWELL.—On Sept. 5th, at the Old Vicarage, Wandsworth, Thomas Symonds Howell, M.R.C.S. Eng., L.S.A., aged 82.

LITTLEJOHN.—On Sept. 4th, at Buckland-crescent, Hampstead, Thomas Herbert Littlejohn, F.R.C.S. Edin.

MARKHAM-SKERRITT.—On Sept. 2nd, at Ivor House, Durdham Park, Clifton, Bristol, after a very brief illness, Madeline Dorothy, only daughter of R. and M. D. Markham-Skerritt, aged 24 years.

MCCONAGHY.—On Sept. 3rd, 1905, at 5, Granville-place, Portman-square, W., Surgeon-General William McConaghy, M.D., Indian Medical Service.

TRONSON.—On Sept. 1st, at Bourne End, William Francis Tronson, L.R.C.P., M.R.C.S., L.S.A.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

RIDERS TO THE VERDICTS OF CORONERS' JURIES.

THERE is at least one serious wrong for which the law provides no remedy. That wrong is of very frequent incidence on members of the medical profession. It is that of an unjust judgment pronounced by what is, in outward semblance, a judicial court, in the form of what is known as a "rider" to the verdict of a coroner's jury. The "rider" to a verdict of a coroner's jury cannot be quashed, as the verdict itself can. It is merely an irresponsible statement made by a jury, to which coroners give an importance not legally belonging to it by "accepting" it. Such "riders," however false and harmful, cannot be dealt with as slanders, owing to the protection of "privilege." Moreover, a newspaper is privileged in publishing them, and if it publishes any reasonable explanation or contradiction sent for publication no action will succeed against the newspaper. The following is an example of the annoyance to which medical men may be subjected by reckless "riders." On August 23rd Mr. W. Linford Brown (city coroner) held an inquest at Exeter police-court on the death of Jane Baker. Mrs. Baker died suddenly from apoplexy and a medical man was sent for, but according to the evidence the medical man's wife called down to the messenger to go for Mrs. Baker's own medical attendant. Certain members of the jury expressed great indignation that the medical man did not go at once and ultimately, without giving the medical man, who was not present, any opportunity to explain, a "rider" was added to the verdict of "Death from natural causes" to the effect that "the jury were of opinion that Dr. H——— should have attended." The coroner, in the course of his remarks, is reported to have said: "If the statement of the refusal to attend was correct and the refusal was made with Dr. H———'s knowledge, it was a case of very great neglect of moral duty unless the doctor's own bodily health was such that he could not have gone." The medical man first heard of this "rider" from a patient, after the account of the inquest had been published all over the neighbourhood. His explanation, which he then published, was a simple one. He was out when sent for and his wife offered to tell him of the summons when he came in, an offer which was refused. The sensational paragraph recording the inquest has been read by many more persons than will read the medical man's modest little letter of explanation.

QUAINT SYMPTOMATOLOGY.

To the Editors of THE LANCET.

SIRS,—The mother of a boy who suffers from fits said to me the other day in describing his symptoms: "he loses conscientiousness and can't speak to you, but he foments at the mouth." These fits are evidently epileptic and the "loss of conscientiousness" may be unintentionally but accurately diagnosed, for we know of that moral deterioration commonly found in such cases. I am, Sirs, yours faithfully,

E. S.

TWO QUEER QUESTIONS.

WE have received letters asking us the following two queer questions: 1. "Would you mind mentioning, if not too much trouble, the best works on crepidation or bronchitis, the cheaper the better if valuable?" 2. "I am desirous of establishing a mail-order business for a hair wash made from four different chemicals, one of which is poison. I am not a registered chemist or druggist and I wish to know if I could be prosecuted for selling such a hair wash. ..... If I omit the poison and prepare the hair wash from non-poisonous chemicals solely would I be safe?" The answer to the questions is of course, respectively: 1. Consult a medical man; 2. Consult a solicitor; but lest our correspondents should think that we are replying curtly to save ourselves trouble we will add a few words concerning the mental attitude of the writers, which seems to us quite interesting. We are, of course, constantly asked similar questions, but these two are typical of the position into which ignorant people are betrayed. Each writes an absolutely polite letter asking, as a small favour, information from us which each appears to think that it will be quite reasonable for us to give him. Each will be surprised to find that any exception can be taken to their action in addressing us. Yet the first of our correspondents is trying to get from a medical paper gratuitous medical information, and the second wants a hint on how, having no qualification whatever either as medical man or druggist, he can sell a medical application, possibly poisonous in its nature. An evening paper has recently ceased to exist in the pages of which there were wont to appear week by week columns of the most eccentric and sometimes the most mischievous advice to the public upon medical matters. The editor of this paper would have doubtless felt justified in encouraging the gentleman with "crepidation" to heal himself by the aid of a book; and in indicating to the vendor of a hair wash (the ingredients of which can be varied without respect to therapeutics) how to get at the public with the least risk of the law's interference. But the mantle of the *Echo* has not fallen upon us; we do not dare so greatly. We must refuse to help the first writer to kill himself and the second writer to kill the public.

"INFAMOUS CONDUCT."

To the Editors of THE LANCET.

SIRS,—"Inquirer" raises a point of great interest in THE LANCET of August 19th when he asks what constitutes "infamous conduct" in a professional sense. Roughly speaking, a man may lose his diplomas from committing a felony to giving a laudatory testimonial in favour of a proprietary medicine. In the absence of a specific ruling on the matter by the General Medical Council the practitioner might fall back upon the by-laws of the licensing body from which he received qualifications to practise. Unfortunately for his guidance the universities and colleges follow dissimilar lines in supplying their alumni with extra professional information. For instance, of the surgical bodies the English College gives its Members a copy of the by-laws on admission, the Irish College will permit a Licentiate to see a copy of the by-laws on making personal application at the College, but the Scotch body only gives its by-laws to Fellows.

I am, Sirs, yours faithfully,

August 26th, 1905. S. WESLEY WILSON.

To the Editors of THE LANCET.

SIRS,—Whilst agreeing with "An Expert" that the General Medical Council suffers from a certain amount of haziness in its decisions, still I might be allowed to point out that such is impossible to avoid as each case has to be judged upon its own particular merits, and a law like that of the Medes and Persians would be inapplicable. However, notwithstanding this, "An Expert" would be doing a public service if he would tabulate the decisions which have been given already.

I am, Sirs, yours faithfully,

Sept. 4th, 1905. INQUIRER.

A POINT UNDER THE MIDWIVES ACT.

To the Editors of THE LANCET.

SIRS,—A few evenings ago I was called to a house, being told it was for a confinement, but for which I had not been engaged. On arriving at the house I was informed that the child had been born some hours before I was sent for, and that the case had been conducted by a woman who had not complied with the requirements of the last Midwives Act. The woman told me she had sent for me "to see that everything was all right." This is similar to a case I had a few days previously. I shall be much obliged if you would inform me through your columns whether this is legal conduct on the part of the women. If it is not I should like to know what penalty they are liable to and also what course you would advise the medical man to pursue. Thanking you in anticipation,

I am, Sirs, yours faithfully,

August 23rd, 1905. LANCS.

*** The Midwives Act, so far as it at present applies, prevents a woman not registered under the Act from calling herself a midwife or using any title implying either registration or special qualification to practise midwifery. On and after April, 1910, penalties are prescribed for any woman not registered who habitually and for gain attends women in childbirth. This, it will be seen, will not make it penal for one woman to deliver another, nor for her to accept a reward for doing so in an isolated instance, but, to put it in other words, will forbid an uncertified woman to practise as a midwife. The woman described in the letter of "Lancs." is apparently liable to no penalty upon the facts stated by him.—ED. L.

"A SANITARY PELVISETTE."

WE have received from Mr. F. Michaels an appliance to which he has given the above name. It is shortly a shaped piece of indiarubber with tapes which is to be used in combination with a pad of some absorbent material in cases of ordinary or profuse menstruation or other vaginal discharges. The inventor claims that as it is waterproof there is no possibility of the patient's linen being soiled, that it can readily be detached or cleansed, that it may be used for pathological discharges and may be sterilised by boiling, that no chafing or discomfort accompanies its use, and that it dispenses with the use of diapers and towels. In our opinion, for ordinary purposes there is no advantage in having any impermeable cover to the diaper or pad used in menstruation, and we think that it is far more cleanly simply to use some material which can be burnt when finished with. The apparatus may be useful in cases of very profuse menstruation or of pathological discharges but in that case we consider that the indiarubber prolongations of the cover to which the tapes are attached are too short and that there is a risk of the tapes getting soiled. If these were made longer it is possible that some people might like to use it instead of the ordinary diaper.

SANITATION AT ST. HELENA.

IN the annual report of St. Helena recently issued the governor points out several sanitary improvements which have been effected in the island during 1904. Chief among them is the new system of drainage and water-supply installed at Jamestown. Apparently it was needed, for during the operations of building and excavation revelations were made of the most deplorable drainage arrangements previously existing: "Pipes of various sizes and of different quality, badly jointed if jointed at all and laid regardless of line or gradient, frequently having the fall the wrong way, and often half full of solid matter." Such is the picture drawn by the governor himself. The main drainage was completed at the end of the year and connected with a number of the larger properties, including all the Government buildings. The work of connecting the rest of the houses is in progress. The improved health of the prisoners is no doubt due to this new water system and to the substitution of a pavement of concrete for the old cobble stones in the gaol yard. The death-rate for the year is the lowest recorded since 1897, the decrease in the number of cases of beri-beri from nine in 1903 to two in 1904 being most satisfactory. An epidemic of enteric fever was attributed to probable contamination of the water-supply owing to the heavy floods which took place in April, when the water swept down from the highlands, carrying soil and crops with it, and doing considerable damage to the new works in course of construction. The colonial surgeon, Dr. W. J. J. Arnold, is indefatigable in his efforts to improve the sanitary condition of the colony. The old earth floors are gradually being abandoned and sufficient means of ventilation are insisted on. The great drawback to the success of the colony is that while possessing a civil population of 3458 it has no industry. Efforts are being made to work the flax plant, which, as well as the Furcræa aloe, thrives in St. Helena. The cultivation of several varieties of trees of which the seeds were sent from Kew Gardens was attempted, but the only successful result was in the eucalyptus, of which there are several species in the island. The mean temperature recorded for last year was 60·40°, and as the governor states in his report, "the highlands of St. Helena possess a climate that is in no sense tropical. The sun is never really too hot. In fact, it is difficult to believe that St. Helena is in the tropics when one reaches the high grass lands."

THE TREATMENT OF MEDICAL MEN AT HARROGATE BATHS.

To the Editors of THE LANCET.

SIRS,—I shall be glad if you will kindly insert a few comments in reply to the letter on this subject in THE LANCET of August 19th, and allow me to condemn at the outset this method of flying into public print over such an isolated case when a private letter of protest to the manager would have amply met the case. I may say that I had a West-end physician visiting me last week and simply by mentioning my name to the manager he was shown every courtesy and personally conducted round the baths by Mr. Buckland and given every facility of trying the baths during his stay. Now I take it that it is a matter of profit or loss (at least, the corporation look upon it as such) and I fail to see why, just because the writer is a medical man and has served his country for 27 years (not for love alone!) he should be entitled to come year after year and partake of the waters and baths free. It is a different matter when a medical man in active practice gets this privilege (and a great privilege it is) that he in turn can send patients for the cure and thereby greatly assist the success of the baths, which, might I add, will certainly compare favourably with any of those in or out of England.

I am, Sirs, yours faithfully,

Harrogate, August, 1905. D. B., L.R.C.P. Lond., M.R.C.S. Eng.

VOLUNTEER MEDICAL OFFICERS.

To the Editors of THE LANCET.

SIRS,—Why are surgeons of Volunteer corps, who have obtained the necessary certificate of proficiency, superseded by a Royal Army Medical Corps man for examining and reporting on the fitness of recruits (Volunteers) under Mr. Arnold-Forster's latest regulation? Is it that the proficiency examination is not considered sufficient to qualify them for the work or because the War Office authorities desire to pass a gratuitous affront upon them?

I am, Sirs, yours faithfully,

August 29th, 1905. SURGEON-CAPT. VOL. CERTIF.

"WIRELESS" ELECTRIC BATTERY.

THIS apparatus consists of a battery of dry cells and a small induction coil contained in a nickel case, contact being established by sliding one of the ends of the case outwards. On grasping the case and pulling the cover outwards the effects of an interrupted current are felt, the intensity increasing as the cover is pulled. The apparatus may thus conveniently be employed for the application of a faradic current to various parts of the body. Although the battery may be called, strictly speaking, "wireless," since there is no wire, yet the case itself serves the purpose of a wire. There are no electromagnetic waves propagated in the ether as the title might imply. But the apparatus is ingenious. It is made by the Wireless Battery Company, of 80A, Southwark-street, London, S.E.

WANTED—A HOME.

To the Editors of THE LANCET.

SIRS,—I would be much obliged if any of your readers could tell me of a home for a youth, aged 20 years, who is mentally weak. He is not quite an idiot—can speak and behave sensibly but is subject to violent outbreaks of temper and might be dangerous at these times. His people are fairly well off and wish to pay £30 to £100 a year for his charge.

I am, Sirs, yours faithfully,

Sept. 2nd, 1905. W. H. G.

H. W. L.—The bottle enclosed by our correspondent would certainly safeguard a person from taking by misadventure any poison kept in such a bottle; but, as we have said upon many previous occasions, the commonest instances of poisoning by misadventure are those in which carbolic acid, oxalic acid, cyanide of potassium, and other

poisons used in the arts or for domestic purposes, are kept in bottles which have previously held whisky, ginger-beer, or other more or less innocent fluids.

H. A.—The wording of the paragraph is ridiculous and it is most improbable that either of the two persons whose names are mentioned have had anything to do with its insertion.

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (11th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.).

TUESDAY (12th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.).

WEDNESDAY (13th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.).

THURSDAY (14th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.).

FRIDAY (15th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.).

SATURDAY (16th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (11th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—2 P.M. Dr. Arthur: Skiagraphy.

TUESDAY (12th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies street, W.C.).—4 P.M. Dr. C. O. Hawthorne: Clinique. (Medical.)

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M. Dr. Shuter: Anæsthetics.

WEDNESDAY (13th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies street, W.C.).—4 P.M. Mr. J. Clarke: Clinique. (Surgical.)

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—3 P.M. Mr. Bidwell: Intestinal Surgery.

THURSDAY (14th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. Hutchinson: Clinique. (Surgical.)

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—2 P.M. Dr. Arthur: Skiagraphy.

FRIDAY (15th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, (22, Chenies-street, W.C.).—4 P.M. Mr. M. Yearsley: Clinique. (Ear.)

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M. Dr. Shuter: Anæsthetics. 4.30 P.M. Mr. Bidwell: Intestinal Surgery.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

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METEOROLOGICAL READINGS.

(Taken daily at noon by Steward's Instruments.)

THE LANCET Office, Sept. 7th, 1905.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation in Vacuo.	Maximum Temp. in shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks
Sept. 1	30·21	N.W.	...	105	64	54	53	57	Overcast
" 2	29·84	W.	0·02	94	69	57	58	61	Cloudy
" 3	29·89	W.	...	118	75	59	59	64	Cloudy
" 4	30·05	W.	...	115	72	60	61	64	Cloudy
" 5	29·94	S.W.	...	106	70	58	61	63	Cloudy
" 6	29·70	N.E.	0·07	83	70	63	64	66	Raining
" 7	29·57	S.W.	0·17	81	64	59	59	63	Cloudy

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